ELECTRICAL REVIEW

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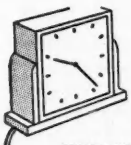

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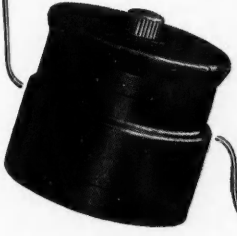

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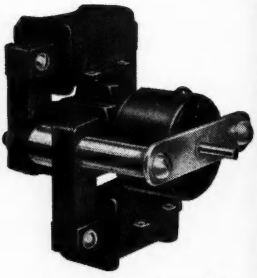

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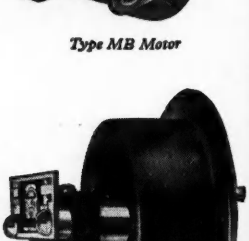

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ELECTRICAL REVIEW

THE OLDEST ELECTRICAL PAPER

ESTABLISHED 1872

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Factory Report

ACCIDENTS—TEMPORARY WIRING—LIGHTING

THE report of the Factory Department of the Ministry of Labour and National Service, which was briefly summarized in our last issue, shows that factory modernization is progressing, though premises unsatisfactory for manufacturing purposes continue to be used in congested areas.

There is comment on the impact on working conditions of electrical load spreading and staggered hours. Their effects on artificial lighting were good in some factories and bad in others, while load-shedding fortunately did not cause any reportable mishaps during the first (1946-47) winter of trial. It is said in this connection that restoration of roof glazing reduced the lighting load of one large workroom in a factory by 100 kVA, yet in some areas the removal of wartime black-out, says the report, "is still not yet complete."

Fewer Electrical Accidents

There were fewer electrical accidents in that year, but the reduction was too small in proportion to the total to enable any useful conclusions to be drawn. However, the total of electrical fatalities was less than at any time since pre-war days. The greater proportion occurred on domestic and miscellaneous industrial premises, which are not subject to Factories Act inspection. Nine of the forty-one deaths on purely domestic premises took place in bathrooms (no reduction) and electric fires were involved in seven of the cases. The most noticeable reduction appears to have been in relation to miscellaneous industrial premises, which include overhead lines and electric railways.

Portable electric tools are again said to be responsible for more accidents than any other class of electrical apparatus, except switchgear. What proportion of the relevant figures should fairly be debited to the tool itself, apart from its associated connector cable with plug and socket outlet? One wonders because at the time of scarcity to which the report applies there was concern about the quality of some of the smaller wiring accessories that were being offered for factory installation.

Available Safeguards

Portable appliance makers may perhaps be reminded that a stud-welding gun is now available which is completely encased in a moulded insulating sheath. Earth leakage protection has been discussed from time to time and factory electrical inspectors have for a long time been recommending a step-down in voltage for portable tools and temporary lighting used by contractors on constructional sites. Efforts more recently made to re-create an interest in these precautionary aspects appear to be succeeding to some degree.

Turning from purely temporary to what are usually regarded as permanent installations, it is pleasing to be able to record the fact that new factories are generally being designed with good artificial lighting systems. Fluorescent light attained to its present fashionable popularity through wartime emphasis on daylight simulation and production of more

light for the same energy, whereas works managements appear now to be favouring its use for quite different reasons.

Small works are prepared to bear the cost of installation, even when they contemplate moving to other premises within a few months, because the tubular system can readily be taken down and refitted elsewhere. Larger concerns, especially in the lighter industries, similarly consider a rigidly fixed system of illumination to be a disadvantage when production line machinery has frequently to be rearranged.

Finally the report seems to confirm a point of some interest in respect of the positioning of fluorescent fittings. In a large clothing factory, where the maximum intensity is needed at the sewing machine needles, experiments have shown the most satisfactory illumination to be obtainable from tubes placed at right angles to the work benches.

REFRIGERATION PROGRESS

LAST year exports of refrigeration equipment from this country were valued at £4,876,532, which was eighteen times the 1938 figure. This was one measure of the progress made by the industry which Mr. E. G. Batt, director of the British Refrigerator Association, quoted at that body's annual luncheon last week. Another was the fact that whereas before the war domestic refrigeration here was practically entirely dependent upon imports, now that side of the industry could satisfy home needs and still be an active exporter. Mr. Batt aimed at demonstrating to Lord Citrine, chairman of the British Electricity Authority, who was the principal guest, that as the industry was obviously able to meet all requirements there was no need for a parallel organization.

ELECTRICITY STAFFS' COMPENSATION

AFTER a three-hour debate the House of Commons last week approved the draft Electricity (Staff Compensation) Regulations, which provide against loss of employment or worsening of conditions through nationalization. It was clear from the criticisms of every speaker (except the Ministers presenting them) that the regulations are by no means perfect. Nevertheless, they seem to represent a reasonable compromise between too wide a scope and too narrow; between excessive and unmerited compensation and injustice. The Minister of Fuel and Power agreed that although the unions and associations concerned had been consulted, he could not say that they were satisfied with every detail, but, he said, broadly speaking they were satisfied. No doubt the referees by which disputes are to be considered will be guided to some extent by the views aired in the Commons — where they were reasonable.

SPARE-TIME WORK

ONCE again the problem of spare-time work by electricians has cropped up—this time at Weymouth. This competition, at cut prices, of wiremen with their employers was bad enough in former days. Now with the operation of a five-day week it is likely to be more serious. We seem to remember that the Electrical Trades Union once deprecated the practice and presumably would not protest if contractors made it a condition of employment that electricians should not engage in private work. This course was suggested by a representative of the Southern Electricity Board at the meeting of the Weymouth and Portland Chamber of Trade at which the matter was raised and the Council of the Chamber is recommending its adoption.

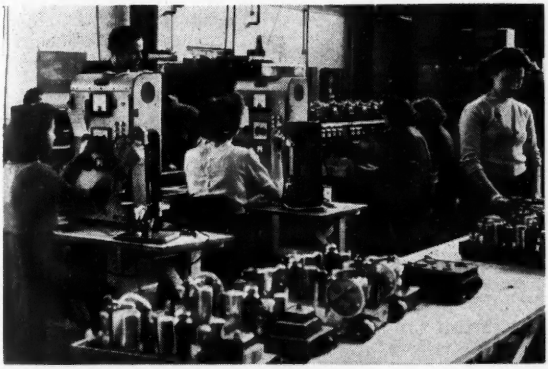
AMERICAN ELECTRICITY RATES

THE *Electrical World* (New York) reports that requests for utility rate increases were made at a sharply increasing pace during the last quarter of 1948 and the pace continues. Some measure of surprise is expressed at the comparative alacrity with which the increases are sanctioned by utility regulating Commissions. This is attributed to the Commissions' realization of the companies' need for capital in order to maintain their services. They are also able to show large increases in their costs. For 25 years the average revenue per residential kWh had been falling but recently it has showed an upward trend. Declining coal prices are expected to afford some general relief. Already they have affected "coal-clause" consumers which have included an increasing number of domestic users.

Electricity in Northern Ireland

II.—BRINGING NEW PROSPERITY TO RURAL AREAS

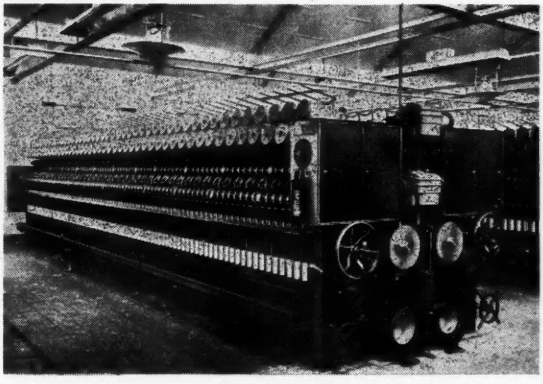
IN our 4th March issue we described the electrical facilities which had been made available in Northern Ireland. During our recent tour we were also able to obtain a very good idea not only of the numerous applications of electricity but also the diversity of industries which its availability is making possible. Especially striking was the new hope of prosperity which the new industries are bringing to the more remote rural areas where hitherto there has been no alternative employment to agriculture.



The production of radio receivers at Corran Works, Larne, will free valuable space at the Pye factory at Cambridge

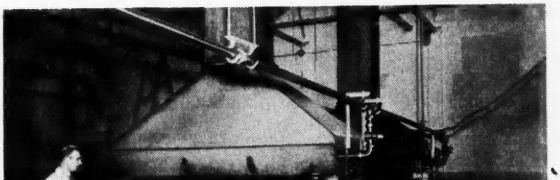
Leaving the boat at Larne we were met by representatives of the Industrial Development Division of the Ministry of Commerce and of the Electricity Board for Northern Ireland. Our first place of call was within easy reach of the landing stage. It was a brand new Government built factory of 35,000 sq ft floor area just completed and occupied by Corran Works, Ltd. This new enterprise is of especial electrical interest since it is being undertaken by a subsidiary of Pye, Ltd. The production of radio receivers here will permit the parent company to free valuable space at its Cambridge works for the increased manufacture of television sets and specialized instrument work.

Eventually the Larne factory will be practically self-contained. Apart from machine shops, degreasing, paint spraying and plating departments, it has its own tool room, undertaking tool repairs and jig making. Production will be on the most up-to-date lines employing conveyor systems for the assembly work. One great aid to production is the employment of standard-sized trays, 2ft by 1ft, for holding components and sub-assemblies. Besides being the most convenient size for the benches, these trays fit into standard trolleys for transport



Electrically driven rayon spinning machines at the Braidwater Spinning Co.'s factory at Ballymena

through the factory. We were told by the management that it considers the labour available in the district to be potentially of a very high standard and

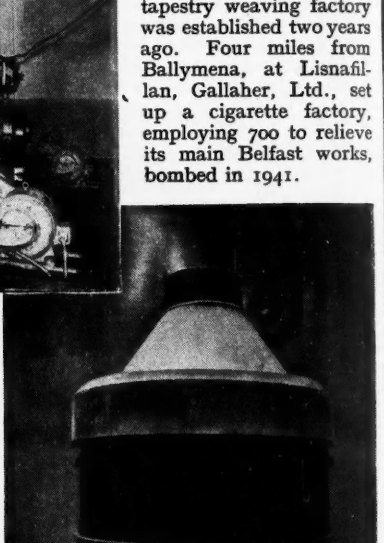


Both spray and roller methods are employed for drying milk at the Coleraine works of Benger's, Limited. A hollow disc at the top of the conical housing of the spray dryer on the right rotates at a speed of 7,500 r.p.m. the tapered driving spindle being protected by the cover shown in the photograph during cleaning operations

to compare most favourably with that to be found anywhere within Great Britain. From the export point of view in particular the situation is very satisfactory and the low sea-freight costs will enable the company to compete on favourable terms with manufacturers in apparently more conveniently situated positions in Great Britain, a feature which is true of many other locations in Northern Ireland.

Larne itself, a town of about 11,000 inhabitants, has hitherto been dependent upon the British Aluminium Co.'s plant, a cement works, a paper mill and linen and clothing factories. The aluminium plant, which was in full operation up to the end of the war is now the scene of a new industry, and the B.A.C. is embarking upon the recovery and conversion into paint of iron oxide from its ferrous residue settling beds. The electricity supply for the area has recently been taken over by the Electricity Board.

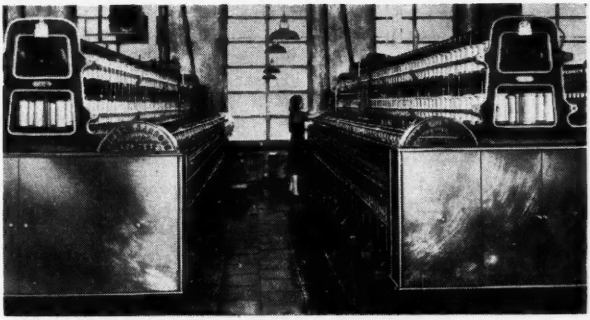
A short distance outside the town, at Millbrook, another paint factory belonging to Samuel Courtney has already been in operation for some time. On the way to Ballymena there are several small linen mills which have been in operation for many years and, at Randalstown, a few miles off our road to the left, are the Old Bleach Linen Co.'s works where linen, carpets and furnishings for the *Queen Mary* and *Queen Elizabeth* and other liners have been made. Also on our left in Creevilly Valley a tapestry weaving factory was established two years ago. Four miles from Ballymena, at Lisnafillan, Gallaher, Ltd., set up a cigarette factory, employing 700 to relieve its main Belfast works, bombed in 1941.



In Ballymena itself we called on the Braidwater Flax Spinning Co., Ltd., an old-established concern which has been operating its own steam turbines (one 1,250 kVA and one 750 kVA). It was, however, decided that extensions rendered necessary to achieve increased production should be fed from the Board, and as a result of change-over of the entire plant to the Board's supply is now proceeding. Transformer capacity amounting to 2,300 kVA has been installed and a demand is anticipated up to 2,250 kVA. A recently

established rayon spinning department has altogether 320 h.p. of motors installed to drive the banks of preparing, spinning, doubling and winding machines. Electrically operated humidifiers are also employed to provide the damp atmosphere essential to the work, and a well-designed fluorescent lighting system is much appreciated by the operators.

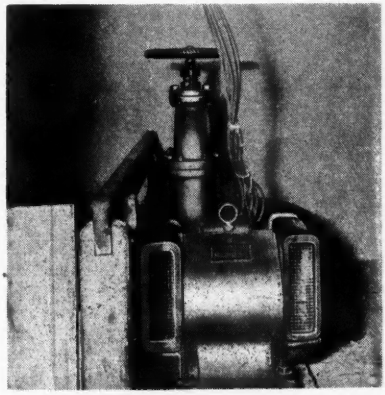
Northern Ireland is a very large producer of milk and many thousands of gallons are exported in liquid, condensed or dry state. During our tour we saw several processing plants. In Ballymoney, the next town we visited, is the original factory of Nestlé's Food Products (N.I.), Ltd. We did not have time to inspect this, but at Omagh we went, as we shall mention later, to see the largest of the company's three factories (the third is at Castledawson).



Wet spinning at Sion Mills

Driving on through the Teeshan peat bog (the second largest in Ireland), we reached Coleraine, where three new industries have recently been established. Macaroni and other alimentary pastes are made by Shamrock Food Products, Ltd., and E. W. H. Stanleigh & Co., Ltd., are making numbering machines. Each of these factories takes about 70 kVA. The most important recent enterprise here, however, is that of Benger's, Ltd., who have opened a large up-to-date milk processing factory designed primarily for the manufacturing of the company's own specialized products but at present engaged largely on work for the Ministry of Food. Capable of dealing with about 40,000 gallons of milk a day the factory at present has a load of nearly 200 kVA, which is expected to be more than trebled as production increases. The factory has already been extended very considerably.

The milk drying plant is of particular interest. Both spray and roller methods are employed. In both cases the milk on arrival at the factory is brine cooled for storage pending treatment, 8in. by 8in. Weir twin ammonia compressors being used. These are fully automatic and controlled by Igranic contactor gear. Milk is then heated to 190 deg F and vacuum evaporated to about 40 per cent solid. In the 25ft diameter polished stainless steel spray drying compartment the evaporated milk is fed into a hollow disc containing four ports rotating at 7,500 r.p.m., which atomizes it: a 40 h.p. motor-generator is employed to act as a frequency changer to secure this high speed. The particles of milk come into contact with hot air (300 deg F) ejected from beneath the spinner. Within approximately 1/40 sec the temperature has



With the aid of this 25 h.p. pump and a similar 30 h.p. unit 1,000 acres of land have been reclaimed for agriculture on Mr. G. M. Fulton's farm at Willsborough, near Londonderry

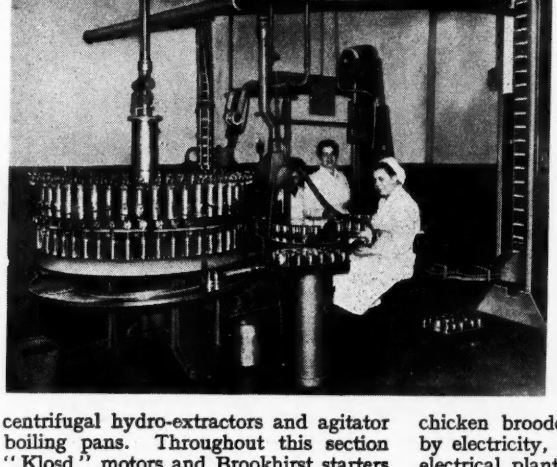
been reduced to 160 deg F and the dried milk is carried away by means of a Locker electrical vibrating conveyor underneath a Visco filter. From 10 to 12 cwt an hour can be dealt with by the spray drying plant, representing between 25,000 and 30,000 gal of liquid milk in a run of 20 hours' duration.

The four roller dryers used are each capable of handling 120 gal of skimmed milk or 150 gal of full-cream milk an hour. Each of these machines is driven by a 13 h.p. 1,400 r.p.m. Crompton Parkinson "Klosd" type motor which, in view of the critical operating speed required, is controlled by an Ellison speed regulator. Because of the inevitably damp conditions prevailing "Pyrotenax" mineral insulated cable is employed throughout all processing rooms of the factory.

For producing vegetable extracts and other special products the plant includes centrifugal hydro-extractors and agitator boiling pans. Throughout this section "Klosd" motors and Brookhirst starters are employed. The wax cartons used are made in automatic electrically operated forming machines. Solenoid-actuated valves are employed on the filling machines, small electric heaters being incorporated in the sealers. To supply the large quantity of water required in the factory an automatic pumping plant comprising three Pulsometer pumps driven by 30 h.p. Metrovick motors has been provided; in full operation they have a capacity of over 100,000 gallons an hour.

The inspection of pumps employed for the opposite object, namely, the removal of water, was the next "treat" in store for us. True, the crawling along the slippery top of a narrow dyke on a pitch-black winter evening in the pouring rain, with several feet of icy water on one side (not to mention a certain amount of barbed wire) was not calculated to put one in the most favourable frame of mind to appreciate the merits of the pumps, but the conditions were undoubtedly ideal for demonstrating the purpose and efficacy of the installation.

At Eglinton, between Limavady and Londonderry Mr. G. M. Fulton has, on the advice of the Board's engineers and with the aid of one Pulsometer pump (with a 25 h.p. Scott motor) and one Craig pump (30 h.p. motor), been able to reclaim and cultivate nearly 1,000 acres of otherwise waterlogged land. The proposed installation of another pump will render a further tract of 300 acres of land usable. Apart from the pumping, Mr. Fulton is very electrically minded. Among other things he has installed fluorescent lighting to assist in potato grading, electric heating in three glass houses with industrial type fan radiators, chicken brooders and incubators heated by electricity, while in his workshop the electrical plant includes a drill, grinder, planer, "ripsnorter" saw and a battery charger. A 25 h.p. motor drives machinery for the preparation of home-grown cereals for livestock feeding.



Ninety-five tins a minute are filled with condensed milk by this automatic machine at the works of Nestlé's Food Products (N.I.), Ltd., Omagh

Londonderry, where we spent our first night, is very largely a shirt-making centre. The adoption of individual electric drive and conveyer systems is the latest development here so far as the use of electricity is concerned. During the war Londonderry served as the Allied

base guarding the Western Approaches. Recently part of the Harland & Wolff repair depot was taken over by Derryware Engineering, Ltd., for the manufacture of envelope-making machines, one type of which is capable of turning out envelopes at the rate of four a second.

Our progress after leaving this factory on Tuesday morning was handicapped by the fact that severe flooding following torrential rain on the Sunday night had put the main road under 5ft of water in places and made long detours necessary. Eventually, however, we arrived at Strabane, on the Eire border. Here a prosperous new industry, the manufacture of ladies' underwear, has been developed by A. Gallagher, Ltd., whose production is finding a ready sale abroad.

A few miles farther south we crossed over the river Mourne, a tributary of the Foyle, at Victoria Bridge, adjoining which is a potato dehydrating factory, and went back along the west bank to Sion Mills. Established in 1835 this linen and rayon spinning mill has three distinct sources of electric power. About 800 h.p. is provided by Turnbull water turbines, 1,340 h.p. from "Metrovick" steam plant and 200 h.p. from the Electricity Board. Recently a new rayon staple fibre mill equipped with individual motors has been completed.

Retracing our steps to Victoria Bridge we continued south down the road which runs alongside the river to Omagh where, as mentioned previously, Nestlé's Food Products (N.I.), Ltd., have established a milk processing factory. This factory employs nearly 400 people and handles about 40,000 gal of milk a day. Most of this is converted into condensed milk, being weighed, cooled, stored, pasteurized, condensed and homogenized. The two condensing units installed are together able to deal with 3,000 gal of milk an hour, and the canning plant will handle 10,000 tins an hour. Both batch and continuous sterilizing methods are employed. For the manufacture of another product, "Milo," a preparation of milk, cocoa, sugar, malt, minerals and vitamins, a vacuum dryer and grinding machine are employed. With a can-making plant the total maximum demand of the factory amounts to 425 kVA. Also recently started up in Omagh is a new industry in the process of establishment by the Omagh Shirt & Collar Co., Ltd. The Government-built factory intended for their occupation is not yet completed but a pilot plant is in operation, and when in full production is expected to employ 500 workers.

In a subsequent issue we shall refer to some of the other industries we inspected during the remainder of our tour.

Legislation in Eire

From Our Dublin Correspondent

THE Electricity (Supply) (Amendment) Bill introduced in the Dail on 4th August, 1948, is now being distributed amongst deputies. Its provisions include the setting up of an arbitration tribunal for members of the Electricity Supply Board other than manual workers; changes in regard to superannuation schemes; provisions for the acquisition of lands; and an increase in the amount of meny which may be advanced to the Board from the Central Fund.

The proposed arbitration tribunal will be identical with that for manual labourers set up in the 1942 Act. It will consist of a chairman and two ordinary members, one to be appointed by the E.S.B. and the other by the general employees concerned. The chairman will be appointed by the Minister for Industry and Commerce.

Under the Superannuation Act of 1942 the trustees of the Superannuation Fund may lend superannuation monies to the Board, the rate of interest thereon to be approved by the Minister for Finance, but in the new Bill the rate of interest will not need the consent of the Minister for Finance; it is provided, however, that the rate shall not exceed 4 per cent per annum.

Section 17 of the new Bill increases by £16,000,000 the advances which may be made to the Board from the Central Fund. The limit of such advances is fixed by the various Electricity Acts and has been increased from time to time to make provision for future commitments. The Board has submitted an estimate of the capital required for its projected programme during the period to 31st March, 1952. This envisages expenditure totalling £29,500,000 as follows: Generation, £18,783,000; transmission and distribution, £12,440,000; general, £2,762,000; Shannon fisheries, £15,000; rural development, £8,000,000, less £12,500,000 provided under the 1945 Act.

Views on the News

By REFLECTOR

REFERRING in the "Parsons News Letter" to the Canadian turbo-alternator contract secured by C. A. Parsons & Co., Ltd., the chairman (Sir Claude Gibb) states that the order was obtained only by giving a delivery promise equal to that given by American competitors. Consequently, he says, the company must deliver the machine dead on time or earlier if possible. He urges all employees to put a little more into their individual efforts. Sir Claude rightly says that this is not just a "pep talk," but common sense; it is a means of avoiding unemployment.

★ ★ ★

The Labour Correspondent of the *Manchester Guardian* says that the average age of the drivers on the Swiss Federal Railways has risen from 41 in 1913 to nearly 49 last year. Fifteen per cent of them were between 61 and 65. There are several possible reasons for this, but the one I like best is the general adoption of electric traction. The now-vanished electrical machines on railway station platforms used to bear the label "Electricity is Life." It certainly means longer life on the Swiss Railways, and it would be interesting to have similar British figures.

★ ★ ★

Having just had occasion to replace a fire element of the rod type, I could not help thinking that the time was more than ripe for standardization. There are at least sixty different types, excluding the different voltages. Apart from the various lengths (diameters do not matter so much), there are at least six more or less generally accepted methods of fixing. My personal preference is for the clip-in type. The end thumb-screw models have a tendency to arc slightly, however tightly done up, while the various screw methods, although ensuring first-class contacts, have a tendency to corrode and so become extremely difficult to remove. The plug-in types seem unnecessarily complicated. A committee of the British Electrical and Allied Manufacturers' Association has, I believe, been going into this question of standardization for some time. With the present enforced reduction in the manufacture of fires, the time would appear most opportune for coming to a decision.

★ ★ ★

Satisfaction was expressed at a recent meeting of the Warwickshire County Council that the "defeat" of the British Electric Authority of that Authority's hint of its desire to erect a power station in the Hill Wootton district. It was unfortunate that this item was followed by a confession that the Council was unable to prevent the erection of gasholders by the Leamington Priory Gas Co. All the Council could do, the chairman said, was to make the best of a bad job "and I can assure you we shall do that." How does one make the best of a gasholder?

★ ★ ★

I have been surprised at the continuance of the initials "A.M.E.E.," which denoted Associated Municipal Electrical Engineers before vesting day came along and municipal electrical engineers were no more. I have not seen the change announced, but according to Mr. A. M. F. Palmer, speaking in the debate on the Electricity (Staff Compensation) Regulations, the initials now stand for Association of Managerial Electrical Executives —a nice derangement of adjectives.

★ ★ ★

A certain amount of familiarity with electricity will no longer breed contempt of it in the mind of one New Zealand fitter. "Potpourri," in the *N.Z. Electrical Journal*, tells how this employee, wishing to have a smoke and being without matches, struck upon the bright idea of joining a piece of wire to one of the low-voltage (60 V d.c.) factory busbars and touching the opposite busbar. There was a blinding flash, the main breaker came out, and the fitter staggered out minus eyebrows and hair.

★ ★ ★

A distinct change in native dietary is indicated by the news that an African tribal chief has ordered an electric fish and chip range from a Preston firm—if the range is to be used in an orthodox fashion.

House-heating Trials

Summarized Results of Experimental Investigations

By P. SCHILLER
Dipl.-Eng., M.I.E.E.

AFTER having shown meritorious enterprise by erecting a number of full-size houses for testing the effect of improved structural heat insulation on the fuel consumed for space heating, the Building Research Station of the Department of Scientific and Industrial Research embarked on a much larger experimental scheme, comprising twenty municipal-type houses, each equipped with a different combination of appliances.

This scheme was inspired by the Egerton Report[1] (more particularly by its Chapter 7), in which an attempt is made to compare the annual fuel consumptions for heating an assumed house of 770 sq ft external floor area by eight different combinations of appliances to a certain routine, comprising maintenance of a "background" temperature of 45° to 50° F in all rooms, with "topping-up" of the bedrooms, kitchen and living-room to 55° to 65° during given daily periods.

The houses at Abbots Langley, which is the site of the new B.R.S. scheme, have a floor area of 925 sq ft, and are all provided with increased insulation. From October, 1947, until March, 1948, they were run—untenanted, but primitively furnished—by research staff, who aimed at keeping the room temperatures to a prescribed schedule, simulated hot-water usage at the rate of 250 gal/week (the "Egerton standard") and simple hob cooking.

Fuel Consumption Records

All fuel consumptions were recorded. In addition, tests on draught conditions, noise transmission and air changes were made. It is noteworthy that, in spite of extra window fasteners and special weather-stripping of external doors, the average rate of air change could not be reduced below 2.4 per hour, whereas the Egerton Committee was satisfied with an equivalent minimum value of 1.2. The windows were kept shut all the time and the doors opened once every hour during the day, when the staff made routine visits.

The space-heating arrangements may be divided into three categories, called "partial," "two-stage" and "whole house," according as there is living-room heating only, background heating plus topping up, or central heating of all rooms. From the first report on the trials,[2] the accompanying table has been prepared. It deals with only those combinations which appear of particular interest for purposes of comparison and contains the consumption figures for space-heating, confronted, where available, with values from Table 7(4) of the Egerton Report. Further, the observed consumptions ("delivered" quantities) are converted to "coal equivalents," expressed in therms and calculated on the basis of electricity-generation and gas-production efficiencies of 22 and 50 per cent respectively, on the assumption that any new heating load will require the provision of new (modern) plant.

Effects of Solid-fuel Boilers

The individual houses or combinations of appliances are referred to by the numbers used by the B.R.S. and in the Egerton Report. As several of the houses considered are equipped with an independent solid-fuel boiler, which dissipates a fairly large amount of heat within the building, the method of water-heating is also indicated. Since the quality of a heating system will be judged by the user mainly by the comfort it affords in cold weather, the temperatures observed in the living-room and the second bedroom during a cold snap in November are added. The capital cost of the appliances (including cooker, etc.) is given only for the sake of interest, the following comments being confined to the "coal economy" aspect.

The electric space-heating installation, which heads the table, consists of thermostatically controlled tubular heaters under the windows of the living-room, supplemented by an electric fire;

COMPARATIVE HEATING ARRANGEMENTS AND CONSUMPTIONS

House A	House E	Living-room	Bedrooms 1	2	3	Hall	Water-heating by	Consumption for space-heating in winter: for	Solid fuel* A	Solid fuel* E	Electricity: Delivered A	Electricity: Delivered E	Electricity: Coal equivalent A	Electricity: Coal equivalent E	Gas: Delivered A	Gas: Delivered E	Gas: Coal equivalent A	Gas: Coal equivalent E	Total coal equivalent A	Total coal equivalent E	Temperature L 17.00	Temperature B 21.00	Capital Cost
									Th.	Th.	kWh	kWh	Th.	Th.	Th.	Th.	Th.	Th.	Th.	Th.	°F.	°F.	£
12	6	Electric tubular heaters and fire	Electric convectors			El. convector	Boiler	L, B, H	—	—	4282	5133	665	795	—	—	—	—	**665**	795	64	51	130
								H	—	—	795	—	120	—	—	—	—	—	120	—			
								L, B, H	—	—	5077	—	785	—	—	—	—	—	**785**	—			
9	1	Closeable fire with convection	El. fires			Radiator from boiler	Boiler	L, B	*668*	485	361	363	54	55	—	—	—	—	**722**	540	59	48	190
17	8	Openable stove with convection	El. fires			El. convector	Electricity	L, B	730	485	114	363	18	55	—	—	—	—	**748**	540	56	48.5	160
								H	—	—	830	210	129	32	—	—	—	—	129	32			
								L, B, H	730	485	944	573	147	87	—	—	—	—	**877**	572			
10	7	Closeable fire with convection	Gas fires			Gas convector	Gas	L, B	*683*	485	—	—	—	—	33	33	66	66	**749**	521	59	52.5	180
								H	—	—	—	—	—	—	11	8	22	16	22	16			
								L, B, H	*683*	485	—	—	—	—	44	41	88	82	**771**	537			
15	3	Hand-fired boiler and radiators; Topping-up by electric fires						Whole house and water	1168	1675	339	1700	54	265	—	—	—	—	**1222**	1940	63.5	51	200
16	—	Magazine boiler and radiators						Whole house and water	911	—	—	—	—	—	—	—	—	—	**911**	—	63	54	190
22	—	Openable stove with backboiler	—	—	—	—	Back-boiler	L and water	881	—	—	—	—	—	—	—	—	—	**881**	—	55.5	45	105
11	5	Gas fire with convection	Gas fires			Gas convector	Boiler	L, B	—	—	—	—	—	—	}	676	}	676	}	676	61.5	54.5	180
								H	—	—	—	—	—	—		—		—		—			
								L, B, H	—	—	—	—	—	—	273	—	546	—	**546**	—			

Abbreviations :—A = Abbots Langley, B = Bedrooms, E = Egerton Report (Table 7.4), H = Hall, L = Living-room

* Figures in italics refer to coal, all others to anthracite (or coke).

a convector in each bedroom and a thermostatically controlled one in the hall. Both the tubular heaters and the hall convector were always left "on," the thermostats of the former being set at 55° F from 07.30 to 14.00, at 65° F from 14.00 to 22.00, and at 45° F overnight. It appears doubtful whether the choice of convectors for the bedrooms was a happy one, but the idea seems to have been to provide, in the first place, background heat.

As may be seen from the table, the consumption for living-room and bedroom heating, including full background heat, amounted to 4,282 kWh, corresponding to 665 therms of coal at the power station. It is remarkable that this figure is lower than with House 9, which contains a modern closeable fire with transmission of convected heat to the living-room and bedrooms. In fact, the fire alone required 668 therms of coal, to which is to be added the consumption for the topping-up of the bedrooms, whereas the temperatures achieved were substantially lower than with the all-electric variant.

Misleading Method of Calculation

More surprising is the comparison with the calculated figures for the "Egerton house," which are 20 per cent higher in the case of electricity and 27 per cent lower with the coal fire. If in the latter case the electric bedroom heating is also considered, we have 665 and 722 "coal equivalent" therms for the two Abbots Langley houses, against 795 and 540 therms for the corresponding Egerton houses. In other words, the method of calculating solid-fuel consumptions on the basis of assumed working efficiencies of modern fires, as applied in the Egerton Report, appears to be quite misleading and, under the conditions of the trials in question, the coal economy of electric space-heating has turned out to be equivalent to that of a modern coal fire.

Next in the table are Houses 17 and 10, heated by solid fuel, with gas and electricity, respectively, for topping-up and water-heating. The higher anthracite consumption for House 17 seems to negative the claim for superior working-efficiency of smokeless fuels.

Houses 15 and 16 are included as illustrating central-heating installations, House 15 in the invidious form relying on electricity for topping-up in very cold weather only. The solid-fuel consumptions include kitchen, bathroom and water-heating.

House 22 is a specimen of "partial heating," by means of a modern openable stove with backboiler, at an anthracite consumption of 881 therms. The electric living-room heating of House 12 required 3,060 kWh (coal-equivalent, 475 therms); but without background heating and solid-fuel boiler the consumption would be somewhat higher. The coal equivalent of electric water-heating during the winter can be estimated at 350 therms.

Finally, House 11 is supposed to represent the gas companion to House 12. The coal equivalent is considerably lower, but, unfortunately, the two heating installations are not strictly comparable. The living-room of House 12 has, in addition to a fire, thermostatically controlled tubular heaters, which were kept "on" all the time; the electric hall heater was also thermostatically controlled; the gas convector in the hall, in turn, discharges the products of combustion, including moisture, into the house, and the electric bedroom heaters are convectors, instead of fires.

Incidentally, the coal equivalents of the electricity and gas consumptions for water-heating in Houses 17 and 10 were 670 and 640 therms, respectively, calculated for a whole year; they were practically of same magnitude.

Incalculable Factors

When interpreting the results of these trials, it must be borne in mind that, although an attempt was made to simulate the daily routine of a "typical" family, they were still of a "test-bench" nature, although on a much larger scale than attempted ever before. The "human factor," the effect of the actual behaviour of people in keeping doors and windows open, in not using some of the facilities provided, in tending appliances, etc., could not be considered. What is, for instance, the use of ducting warm air to bedrooms if people will insist on open windows?

It is true that an attempt to consider these factors is being made by continuing the observations with the houses occupied

* Figures in italics refer to coal, all others to anthracite (or coke).

by selected tenants, but, as there is only one specimen of each combination of appliances, the additional information gained will be of limited significance. To get nearer to reality, especially in respect of consumption figures, a statistical approach, comprising samples of at least 100 of each combination of appliances, would be necessary.

However, as a step towards tackling the problems of economic house heating by the methods of operational research,[3] the Abbots Langley trials deserve high praise. They have shown what can be achieved under strictly controlled conditions and the poor efficiency exhibited by solid-fuel fires is particularly noteworthy. A complete economic adjudication would necessitate taking into account a number of additional factors, such as annual costs (capital and working, including fuel, maintenance, expense on decorations, etc.) as well as the deterioration of the working-efficiency of solid-fuel and gas appliances with the lapse of time, and atmospheric pollution. All this, of course, requires the observation of much larger numbers for a much longer time.

References:

[1] Post-war Building Studies No. 19, London, 1945, H.M.S.O.

[2] Journal of the Royal Institute of British Architects, November, 1948, page 12.

[3] *Electrical Review*, 5th March, 1948, page 347.

Non-Metallic Conduit

LIGHT-WEIGHT PLASTIC MIXTURE

THE production is announced of a new form of conduit for enclosing electrical wiring that is less than one-sixth the weight of steel and can be installed in exactly the same way. It will withstand heavy blows without undue risk of damage and can be screwed with the usual dies and taps in the same manner, but more easily. It is thus

Non-metallic conduit with screwed "Egatube" dual-purpose box

interchangeable with steel for extending existing installations, or suitable for all-insulated installations. The provision of a separate earthing wire will ensure positive continuity.

The feature of "Egatube" is that it is rigid, yet sufficiently flexible to permit of a certain amount of manipulation during installation. It can be bent to conform with contours around which it is sometimes necessary to place conduit. While this tube can be bent sharply by gently heating it, the forming of right-angle bends in this way is not recommended because faulty manipulation may reduce the diameter of the tube. Instead the makers supply a complete range of fittings (common to those used with steel conduit), bends, elbows, tee-pieces, hexagon nuts, a dual-purpose box with knockout in the back to reduce types stocked, all-preformed of the same material, which is a special mixture of plastic substances.

Everything, from the raw materials stage onward, is produced in the factory of Electrical & General Accessories (Leicester), Ltd., Holyhead Road, Wednesbury, Staffordshire.

The concentricity of this conduit is worthy of note, since the procedure in extruding concentric tubing is not too well known. The tube is quite smooth internally, so avoiding the chafing of insulation as wires are pulled through.

The material of which it is made is stable at reasonably high temperature and will not maintain flame; resists most acids and sea water; can be embedded in lime, plaster, concrete, or buried underground; compares favourably with galvanized metal in damp situations and can be made waterproof by the simple application of "Egaweld" sealing fluid. Joints so made will withstand 100 lb/sq in internal pressure and remain satisfactory when submerged in water continuously.

"Egatube" is normally delivered black, but other colours are obtainable at extra cost, or it can be painted, any diameter from 0.5 to 1.5in being available and larger sizes by special arrangement.

Transformer Ratings

AMERICAN METHOD OF LOADING BY TEMPERATURE

VISITING delegates from Australia, Belgium, Czechoslovakia, France, Italy, India, Holland, Norway, Sweden, Switzerland and the United States are assembled in London for the meeting this week, under the chairmanship of MR. A. G. ELLIS, of the Advisory Committee on Transformers (No. 14) of the International Electrotechnical Commission

Transformer operating practice in America has undergone a radical change in the past few years. To give delegates an idea of the reasons for, and basis of, this change a preliminary gathering took place under the auspices of the I.E.E. and the British National Committee of the I.E.C. MR. C. O. BOYSE presided and MR. V. M. MONTSINGER (General Electric Co. of America, who is attending the I.E.C. Advisory Committee meeting) explained how the effect of overloads on the life expectancy of transformers is now being evaluated in the United States.

He began with the remark that he is sometimes asked whether they are not too academic in attempting to determine life expectancy by measuring the tensile strength of a bit of insulation. He thoroughly concurred in the view that it is not possible to determine how long it might last by any kind of mechanical or electrical test. He does, however, believe that it is now possible to determine the approximate time when a transformer has reached the condition of inability to resist either electrical surges or mechanical shocks.

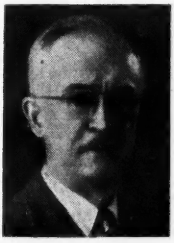
Whether it receives a "death shock" soon after it reaches that state is another matter. It is that uncertain factor which makes it impossible to predict the actual life of any transformer.

There are relatively few installations in which the maximum continuous ambient temperature exceeds an average of 30 deg C. In a few instances it approximates to 40 deg C, the continuous load being close to the rating value. In those cases the life of the transformer is relatively short, so much so as to be considered unsatisfactory.

That experience has caused the basis of rating to be changed so that the continuous "usual service condition" has been lowered from 40 to 30 deg C, but possible short-time daily operation at the higher figure is envisaged providing the daily average does not exceed the lower.

This method of anticipating ambient temperature, among other things, led to intensive study of the effects of temperature and time on the ageing of Class A insulation, which developed into the practice of loading transformers by temperature in the United States as explained in A.I.E.E. papers by the lecturer and others.

Oil immersed transformers, air- or water-cooled, will carry about 1 per cent overload for each deg C by which the ambient temperature is below the standard value without exceeding the hot-spot temperature resulting from rated kVA in the standard ambient range. This idea is said to be logical, permitting up-rating in cooler countries. Also under low load factor conditions peak loads in excess of the rated kVA can be carried without reducing the life of the insulation, as determined by its physical characteristics, below that which it will have when carrying rated load continuously. Both these factors are to-day recognized in the A.S.A. Guide to transformer operation.



Mr. V. M. Montsinger

Comparative one-year tests on a large number of samples have shown that dielectric strength alone cannot always be depended upon to indicate the effect of temperature on Class A insulation in oil. Tensile strength tests are practical, simple and reproducible, but cannot be used for dry transformers with Class B insulation of glass fibre, asbestos, or other materials not affected by temperature.

It is not yet possible to predict the life of transformers at some given temperature, because some will continue to function long after their insulation has become embrittled and cracked until mechanically disturbed by short circuit stressing or handling shocks.

It is now recognized from investigations in many laboratories that the rate of ageing as measured by tensile strength of Class A insulation doubles for each 5 to 10 deg C increase in temperature. Selecting 8 deg C as typical of this range enables the effect of higher than standard operating temperatures on the mechanical life of insulation to be evaluated with the aid of temperature gradients in the windings and cooling tubes.

The concluding emphasis was on the need to keep insulation dry, for 0.5 to 1.1 per cent of moisture could result in a 6 to 1 variation of life.

Correspondence

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"Fair Trading"

IS it really "Fair Trading" that the B.E.A. is to be given greater discounts than contractors? As a manufacturer I can make a greater profit from a few large orders than from a number of smaller ones, and may be tempted to offer quantity discounts, but two other important points arise.

First, as I am a small manufacturer, ought I not to help the other small men, which term will cover the majority of contractors? Secondly, in order to secure fair trading for myself I must avoid becoming dependent on one customer, and not follow the example of the staffs of supply undertakings who have become dependent on one employer.

It seems unfortunate that the manufacturing side of private enterprise is not showing more signs of supporting the contracting side: "Divide and rule" still holds.

And what of the consumers? Will they be lured by cut prices into forcing the contractors out of business? Who will then decide whether or not the installation carried out by B.E.A. is safe for connection to the B.E.A. mains?

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The Proving House

I CANNOT imagine that a National Proving House would care to undertake reconditioning: it would be hardly practical. On the other hand, a live organization would keep in contact with the outside world. For example, it could extract and summarize information from those responsible for maintenance and repair departments throughout the country. As your leader of 25th February suggests, a progressive national body could serve the industry in many ways that are outside the province of purely scientific research.

Reports on domestic appliances issued by Area Electricity Boards to their staff serve quite another purpose. These reports provide much useful information in a handy and concise form which may be readily filed for reference as needed. District sales staffs do appreciate them and, although it would be possible for one national body to issue equally satisfactory reports, there are many useful titbits of information which they could not provide, such as stores, code numbers, discounts, addresses of local distributors and comments based upon local trends, as well as informative remarks which a national body might be afraid or too hide-bound to publish.

In any case, it is debatable whether it is a wise policy to take centralization to its logical conclusion. What would be saved in man-power would be lost in the human aspect. Surely the colourful variety of thought and opinion are priceless assets not to be lightly discarded in the name of efficiency.

H. HOBBINS.

Ewell, Surrey.

"Surcharge—Rebate"

THE letters by Mr. B. Gill and "Electricus," in your issues of the 4th and 11th March, are very interesting and Mr. Gill appears to be correct.

In your issue of 27th October, 1944, I corresponded on the subject of "Freedom of Choice" and gave figures of my electricity consumption; since then it has increased because of additional equipment, and other circumstances. I now use an average of 10,178 units per annum as against 5,925 units mentioned in 1944. The cost per unit now without the increase early in 1948 is 0.559d as against 0.66d in 1944; this clearly proves the point I made then that, the more electricity you use the lower the cost. If the increase is included, the cost per unit is 0.585d but, this means that in 1948 I have paid £5 10s 6d more for electricity and the average annual cost has increased from £23 14s 3d to £24 16s.

I have not yet received the first quarter's bill but, from calculations made from the meter readings I shall have consumed about 4,216 units on which the surcharge will cost me £6 3s. This consumption is heavy because of illness and the average used over the last six years during this period is 3,367 units, on which the surcharge would cost £4 18s, so that the illness has cost £1 5s in surcharge. Clearly it is better to be ill

during the remaining nine months of the year. During the last two years the average for the remaining nine months has been 8,300 units which will qualify for a rebate of £3 7s 6d, thus my electricity will cost me £2 15s 6d more because of illness, or £1 10s 6d, if there hadn't been illness, so that Mr. Gill's point is proved.

"Electricus" would seem to be correct in his statement that Mr. Gill uses above the average but, no doubt Mr. Gill has a large house. I know he is an electrical man and it is evident he practises what he preaches, "Use Electricity."

The Clow Committee seems to have had a lot in mind but, what it does not seem to have considered is the fact that the seasons are set by Nature. How can anyone go easy on electric fires during the surcharge period in an all-electric house? How are you to heat water in the winter if you use electricity only? In the summer less current is used for water heating, cooking and space heating, so how on earth can the all-electric people hope to gain sufficient rebate to even balance the surcharge? Even in a moderate all-electric establishment the user is bound to have to pay more.

J. ASHMORE, M.I.E.E.

Sutton Coldfield.

Abandonment of London Tramways

MAY I add my support to the plea of your correspondent, Mr. F. K. Farrell, for the retention of the major routes of London's tramways? In large towns and cities having a heavy two-way traffic electric road traction is justified both economically and otherwise and is supported by the high mechanical efficiency, safety and steady riding of trams on good track and their independence of dollar imports of oil and rubber and of the road surface provided at the public expense.

Trams proceed in an orderly manner along the highway and whatever obstruction is caused by them is due wholly to the area of the vehicle and would be greater for any other public service vehicle of the same capacity. London will require 40 per cent more buses than the present number of trams for the same service. The true cause of traffic obstruction in any road is the parked vehicle which is only now being realized in the bus-served streets of Central London.

It has been the consistent policy of London Transport to neglect and disparage the fine tramway system of the L.C.C. which provided in 1930 the cheapest, quickest and most comfortable service in London. It would be in the public interest that the remaining tramways should be reinstated to their previous standards of efficiency and that then by an enlightened policy of replacement of old vehicles by really modern silent cars and welded track and a realistic outlook in the provision of attractive fares and services, traffic should be encouraged to move efficiently and quickly across London.

B. S. GYLEE,
A.M.I.MECH.E., A.M.I.E.E.

Ffynone, Swansea.

Earth Leakage Trips

IT is difficult to support the view put forward by "C. W. W." in your issue of 11th March, that one leakage trip only should be installed for a complete installation, irrespective of the number of scales of charge. In my view, subdivision should go much further, with the application of leakage trips to individual apparatus—the cooker, washer, wash boiler, etc. Why, for instance, should all clocks be stopped by reason of an earth fault on a cooker element?

Can safety and convenience ever be called a "waste of money," especially the kind of money represented by two or three leakage trips per installation?

Folkestone. T. C. GILBERT.

Manufacturers' Price Lists

IT is a fact that many manufacturers issue price lists with 1939 prices which necessitate the addition of a percentage to arrive at the current price as pointed out by E. H. Maltby (*Electrical Review*, 4th March, 1949).

One of several reasons for this is that many manufacturers sell a wide range of products and periodically add to their range or make modifications to their existing products which necessitates new or amended price lists being issued. If such price lists were issued with up-to-date net prices at the time of issue, the position would be, after a period of time, that the price lists would be subject to a different percentage adjustment in respect of each price list issued, and this

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Sutton Coldfield.

Abandonment of London Tramways

MAY I add my support to the plea of your correspondent, Mr. F. K. Farrell, for the retention of the major routes of London's tramways? In large towns and cities having a heavy two-way traffic electric road traction is justified both economically and otherwise and is supported by the high mechanical efficiency, safety and steady riding of trams on good track and their independence of dollar imports of oil and rubber and of the road surface provided at the public expense.

Trams proceed in an orderly manner along the highway and whatever obstruction is caused by them is due wholly to the area of the vehicle and would be greater for any other public service vehicle of the same capacity. London will require 40 per cent more buses than the present number of trams for the same service. The true cause of traffic obstruction in any road is the parked vehicle which is only now being realized in the bus-served streets of Central London.

It has been the consistent policy of London Transport to neglect and disparage the fine tramway system of the L.C.C. which provided in 1930 the cheapest, quickest and most comfortable service in London. It would be in the public interest that the remaining tramways should be reinstated to their previous standards of efficiency and that then by an enlightened policy of replacement of old vehicles by really modern silent cars and welded track and a realistic outlook in the provision of attractive fares and services, traffic should be encouraged to move efficiently and quickly across London.

B. S. GYLEE, A.M.I.MECH.E., A.M.I.E.E.

Ffynone, Swansea.

Earth Leakage Trips

IT is difficult to support the view put forward by "C. W. W." in your issue of 11th March, that one leakage trip only should be installed for a complete installation, irrespective of the number of scales of charge. In my view, subdivision should go much further, with the application of leakage trips to individual apparatus—the cooker, washer, wash boiler, etc. Why, for instance, should all clocks be stopped by reason of an earth fault on a cooker element?

Can safety and convenience ever be called a "waste of money," especially the kind of money represented by two or three leakage trips per installation?

Folkestone. T. C. GILBERT.

Manufacturers' Price Lists

IT is a fact that many manufacturers issue price lists with 1939 prices which necessitate the addition of a percentage to arrive at the current price as pointed out by E. H. Maltby (*Electrical Review*, 4th March, 1949).

One of several reasons for this is that many manufacturers sell a wide range of products and periodically add to their range or make modifications to their existing products which necessitates new or amended price lists being issued. If such price lists were issued with up-to-date net prices at the time of issue, the position would be, after a period of time, that the price lists would be subject to a different percentage adjustment in respect of each price list issued, and this

would be most confusing to all concerned. Rather than have such a number of differing percentage correction factors, the manufacturers when issuing a new price list arrange their prices to be at 1939 level so that with the percentage addition they give the current price. By this means all price lists issued over a period can be made to bear the same percentage correction factor.

If this were not done, it would mean that every time a price variation occurred it would be necessary for all that manufacturer's price lists to be reprinted which would be most wasteful and take a great deal of time, especially, as is the case with this company, where many hundreds of prices are involved. The percentage adjustment is, therefore, a necessary evil until prices become more stable.

J. G. STATTER & Co.
A. E. Norris, *Director.*
London, S.W.1.

Economic Survey for 1949

GENERATING PLANT PROBLEM

THE major tasks in 1949 for the continuance of progress towards economic independence, outlined in "Economic Survey for 1949," published as a White Paper on Tuesday last, are increased productivity, higher imports to Canada and the United States, expanding production and the continuance of the battle against inflation.

After summarizing the progress in 1948, the Survey deals with prospects for 1949. It points out that the problem of electricity supply is still the gap between peak demand and available generating plant. The amount of new plant commissioned in 1948 was disappointing—566 MW, as compared with the forecast of 1,100 MW. The British Electricity Authority succeeded in reducing the amount of plant out of service from 15 per cent in the winter of 1947-48 to 11 per cent this winter, and this contributed about 400 MW to the available generating capacity. This, combined with load spreading, the mild winter and the reduced domestic demand, consequent upon the introduction of the differential tariff, resulted in less frequent load shedding in the mid-winter months of 1948-49. The position next winter is expected to be similar to that in the winter just past and the net increase in available plant capacity is not likely to be much in excess of the growth of demand. This position will remain until the B.E.A. can put into commission well over 1,000 MW of new plant each year.

The total cost of new power stations which are under construction or have already reached the stage of detailed planning is estimated at £550 million at present prices, and will involve a great expansion in the capacity of the industries which manufacture generating plant. The B.E.A. programme for 1949, covering generating, transmission and distribution, and maintenance and repair, will entail an expenditure of £114.7 million.

It is hoped that by 1952-53, the plant capacity available will be of the order of 14,200 to 15,000 MW, according to the percentage of plant out of service, and the peak demand in severe winter weather is anticipated at 14,900 MW, so that at the lowest capacity figure the gap will have been reduced to 700 MW. The Survey points out that these figures must be treated with considerable reserve since they represent an effort by the industries concerned far above anything previously achieved.

E.I.B.A. Target

THIS year the Electrical Industries Benevolent Association is aiming at a total income of £33,000. In January and February the amount received was £3,704, which was £1,796 below the two-month target of £5,500. It is hoped that this adverse balance will be redressed later in the year by the doubling of subscriptions which has been suggested to donors.

The amounts of £50 or over received by the Association during the two months were as follows:—Accumulator Makers' Association (£100), Metropolitan-Vickers Electrical Co., Ltd. (£500), E.C.A. (Maidstone Branch) (£151), E.C.A. (Worthing Branch) (£100), E.I.B.A. (Darlington Branch) (£135), E.I.B.A. (Hull and Yorkshire Branch) (£98), E.I.B.A. (Leicester Branch) (£146), and E.D.A. (Leicestershire and Warwickshire Branch) (£158).

P.O. Telephone Service

STATISTICS for the year 1947-48, issued by the Post Office, show that at the end of March, 1948, there were 5,809 telephone exchanges throughout the country, as compared with 5,693 exchanges at the end of March, 1939, 52,000 public call offices (against 49,500) and 4,652,700 telephones (against 3,235,500).

PERSONAL and SOCIAL

News of Men and Women of the Industry

WE are informed that **Mr. J. A. Blount,** B.Sc., M.I.E.E., has resigned from Ferguson, Pailin, Ltd., to take up the position of general manager of Resinoid & Mica Products, Ltd. (formerly the R.M.P. Co.), Birmingham, which has recently been acquired as a subsidiary of the Southern Areas Electric Corporation. Mr. Blount received his training with A. Reyrolle & Co., Ltd., and at Armstrong College (now King's College), Durham University. After five years in Reyrolle's Research Department he joined Ferguson, Pailin, in 1934 and latterly has been manager of their Birmingham office and area engineer for the Midlands.

Mr. W. E. Wilson, B.Sc. Tech., A.M.I.E.E., has been appointed Birmingham office manager for Ferguson, Pailin, and district engineer for the Midlands and South Wales areas in succession to Mr. Blount. Mr. Wilson graduated at Manchester University, and after a college apprenticeship course with Ferguson, Pailin, served as switchgear engineer in their Contracts and Sales Engineering Departments. He later joined Siemens-Schuckert (Gt. Britain), Ltd., as sales engineer and subsequently became manager of their Manchester district office. He rejoined Ferguson, Pailin, in 1939 and was appointed manager of their Glasgow office where he has been dealing with the company's switchgear contracts in Scotland and Ireland.

Mr. J. K. Wheeldon has been appointed Glasgow district manager for Ferguson, Pailin, and district engineer for Scotland and Ireland in succession to Mr. Wilson. Mr. Wheeldon joined Ferguson, Pailin, in 1924 as a draughtsman in the Experimental Department after serving a workshop apprenticeship in the automobile manufacturing industry supplemented by a course at the Manchester College of Technology. Since 1936 he has been engaged in the design and development of the company's metalclad and other types of switchgear in the lower and medium breaking capacity ranges.

Mr. W. E. Wilson

Mr. J. A. Blount

Mr. J. K. Wheeldon

Mr. P. R. Mossay, M.A., A.M.I.Mech.E., whose appointment as a director of Laurence, Scott & Electromotors, Ltd., we briefly reported last week, has been with the company since 1931. He was appointed works superintendent at Manchester in 1935 and has been closely associated with developments in the design and production of the standard ranges of a.c. and d.c. machines. He graduated B.A. at Cambridge and served a postgraduate apprenticeship at the Billingham works of Imperial Chemical Industries, Ltd.

Mr. P. R. Mossay

Mr. A. M. Jacobs, M.A., has been appointed to succeed the late Dr. H. J. van der Bijl as chairman of the Electricity Supply Commission of South Africa. He was born at Graaff Reinet, Cape Province, in 1886 and studied at the South African College, Cape Town, and the Royal Technical College, Charlottenburg. In 1912 he joined the Siemens-Schuckert works in Berlin and later was appointed the company's resident engineer for a power plant construction project at Chuquicamata, Chile. After the outbreak of war he entered the service of an American financial and mining concern as assistant consulting electrical engineer and subsequently held positions with undertakings in Java and Hong Kong. He returned to South Africa in 1923 when the Electricity Supply Commission was established, becoming senior and later chief engineer to the Commission. He was appointed a commissioner in 1926, retaining the position of chief engineer until 1948

when he became consulting engineer. He is a past president of the South African Institute of Electrical Engineers and a member of the American I.E.E.

Mr. C. E. D. Greenhalgh

Mr. C. E. D. Greenhalgh, M.I.E.E., resident manager, Ilkley, No. 1 Sub Area, Yorkshire Electricity Board, retired on the 28th February after forty years' service in the electricity supply industry. Mr. Greenhalgh commenced his practical training as a student in the Leeds Corporation electricity works, under the late Mr. H. Dickinson, and received his technical training at the Leeds Technical School and later at the Yorkshire College (now Leeds University). After holding positions at Wakefield and Malvern he went to Watford as deputy electrical engineer and manager. In 1930 Mr Greenhalgh was appointed electrical engineer and manager to the Ilkley Urban District Council, which position he held up to vesting day. He has been a member of the Executive Committee of E.D.A. (Mid East Area) since 1937.

At the meeting of the Grand Council of the Federation of British Industries on 9th March, **Sir Robert Sinclair,** K.C.B., K.B.E., deputy president of the F.B.I., was nominated president of the Federation.

Mr. G. H. Lloyd, manager of Osler & Faraday, Ltd., since 1942, has now been appointed managing director. **Mr. R. A. Cox,** manager of their Glasgow branch, has also been appointed a director.

Mr. A. Stephenson, who has for the past eighteen years been with Thomson & Brown Bros., Newcastle, latterly as lighting engineer, has been appointed manager of the new showrooms which have recently been opened by George Forrest & Son, Ltd., at 159, Princess Road, Moss Side, Manchester.

Mr. C. W. Langmaid, resident engineer and manager for the Eastern Electricity Board at Halesworth, and in charge of the Beccles, Harleston and Southwold districts, has been appointed district engineer for the Beccles and Diss district.

Mr. James E. Fairman, vice-president of the Consolidated Edison Co. of New York, has been nominated as president of the American Institute of Electrical Engineers.

Mr. E. C. Deering, B.Sc., A.R.I.C., has been appointed a joint managing director of Johnson, Matthey & Co., Ltd., to take effect from 1st April. Mr. Deering joined the company in June 1918, as a member of the analytical laboratory where he stayed for two years until transferring to the newly formed research department at the beginning of 1921. He became deputy head of the laboratories, remaining there until 1927, and during this period was responsible for the research work into ceramics which became the foundation for the growth of that side of the company's activities. In 1927 the company began the setting up of an installation at Brimsdown to work a new process for the recovery of platinum from the recently discovered South African ores of this metal. Mr. Deering was appointed general manager and has been responsible for carrying out the process on a steadily growing scale and for effecting great improvements in it.

Mr. E. A. Fowler, M.I.E.E., has been appointed chief commercial officer to the Eastern Electricity Board. Until recently he was the assistant general manager of Electricity House, Ltd., Leeds, which is directed by the Yorkshire Electricity Board. He received his early technical training with the former County of London Electricity Supply Co., and later was with the Strand Electric & Engineering Co., Ltd., and Lund Brothers & Co., Ltd., before taking up an appointment with Electricity House, Ltd., in 1939. Mr. Fowler is a vice-chairman of the North Midland Centre of the Institution of Electrical Engineers.

Mr. F. W. Main, M.I.E.E., has retired from the position of technical director of Enfield Cables, Ltd., but remains on the board of the company. Mr. Main left Johnson & Phillips, Ltd., in 1928 to enter the test and research department of the Enfield Cable Works, Ltd. (as the name then was). He became a director in 1943. One of Mr. Main's principal interests has centred around high-voltage cables, including the development of the compression cable, for voltages from 66 kV upwards. His 66 kV compression cable, still in service between Hackney and Walthamstow, was the first of its kind in the world; his 264 kV compression cable has now been under test at Brimsdown for nearly two years and the design is now available for commercial installation.

Mr. F. W. Main

The Secretary of State for Scotland and the Minister of Fuel and Power have appointed **Treasurer G. R. McIntosh,** of Aberdeen Town Council, to be a member of

the North of Scotland Hydro-Electric Board, in the place of the late Lord Provost Powrie of Dundee. Treasurer McIntosh is deputy chairman of the Consultative Council for the North of Scotland District.

About 250 members and friends of the Benjamin Social and Athletic Club were present at the presentation dance held in

Mr. Guy Campbell, managing director of the Benjamin Electric, Ltd., presenting cups and shields at the company's annual presentation dance

the clubroom at the works, Tottenham, on 5th March. **Mr. Guy Campbell**, the club president and managing director of the Benjamin Electric, Ltd., presented the cups and shields to the successful competitors in the annual indoor games tournaments. Mr. H. G. Campbell, assistant managing director, was also present.

Maj. Gen. Cyril Lloyd, C.B., C.B.E., T.D., has been appointed administrative director of the Department of Technology, City and Guilds of London Institute, as from 1st October. Gen. Lloyd, who is Director of Army Education, will succeed **C. W. French,** C.B.E., D.S.O., M.C., who is to retire.

Obituary

Mr. George Lee, technical engineer to No. 5 Sub-Area of the North Western Electricity Board, stationed at Blackburn, died at his home in Blackburn on 4th March, after a short illness at the age of forty-eight. He leaves a widow and one daughter. Mr. Lee held appointments in London before transferring to Blackburn in 1947 as chief engineering assistant in the Corporation electricity undertaking. The funeral took place on 9th March at Nelson Cemetery. Representatives of the North Western Electricity Board attended.

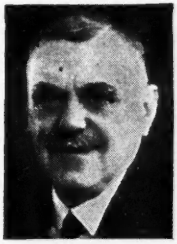
Sir Archibald Page.—The funeral of Sir Archibald Page, whose death was reported in our last week's issue, took place at St. Paul's Presbyterian Church, South Croydon, on 11th March. Sir Archibald's daughters and their husbands were present, and many distinguished representatives of the electrical profession and industry attended. Among them were Mr. T. G. N. Haldane, President I.E.E., Sir John Hacking, Dame Caroline Haslett, Mr. A. N. East, Sir Frank Gill and Sir Thomas Purves.

A memorial service will be held on Monday next (12 noon) at St. Saviour's Church, Walton Place, S.W. (St. Columba's Church of Scotland).

Mr. E. Somers.—While on his way to his duties at Bradford Technical College on 9th March, Mr. Eli Somers suddenly collapsed and died near his home. Mr. Somers, who was sixty-two, had been a lecturer in electrical engineering at the college for forty-seven years.

Mr. E. R. Grote.—The death occurred on 7th March of Mr Edwin Rudolph Grote, A.M.I.E.E., managing director of British Electric Lamps, Ltd., Wimbledon.

Mr. A. H. Dykes.—The electrical profession has lost another of its "elder statesmen" by the death of Mr. Alfred Herbert Dykes, F.C.G.I., M.Inst.C.E., M.I.E.E., at his home at Shortlands, Kent, on 11th March. Mr. Dykes, who had just reached the age of eighty, was educated at the City of London School and the City and Guilds Engineering College. From 1888 to 1892 he was with Siemens Bros. at Woolwich, serving in the traction and estimating departments. During this period he was engaged in the electrification of the Guernsey tramways and was responsible for the design of the Panama and Hobart (Tasmania) tramways and locomotives for the City and South London Railway. He also originated wiring systems and current limiters. In 1892 he joined Latimer Clark & Muirhead as chief electrician (a term which then had a different meaning), and he became works manager. Two years later (1894), with Mr. Handcock, he formed the firm of consultants, Handcock & Dykes, whose name became an electrical household word. He was senior partner when he retired in 1939.



The late Mr. A. H. Dykes

Mr. Dykes was very active in the affairs of the National Register of Electrical Installation Contractors; he was vice-chairman of the Registration Board for many years and contributed an article on the Register to the *Electrical Review* of 19th October, 1945. He was also a member of the Electrical Industry Committee of the B.S.I.

Electricity Generated

STATISTICS FOR 1947

THE analysis of energy produced and summaries of the returns of fuel consumed during the year 1947, the last to be compiled by the former Electricity Commissioners, are now available from the Stationery Office, price 2s 6d.

The statistics are tabulated in the same general form as those for 1946, but relate to 334 stations, ten fewer, the difference being due to discontinuance of generation at fifteen stations and to the bringing into operation of five existing stations that did not generate in the preceding year. Of the authorized stations, 48 were in Scotland and 88 in south-east England, while the south-west and South Wales areas together had 67.

The total energy produced was 42,579.6 million kWh, an increase of 3.2 per cent, the proportion used "in works" being of the order of 5.6 per cent. Coal and coke consumed was 26.2 million tons, an increase of 3 per cent, while the 47,698 tons of oil fuel consumed was 3,631 tons more than in the preceding year

The best performances were those of Battersea (London Power Co.), which used 1 lb of coal per kWh at 63.1 per cent load factor and 286,500 kW maximum load, Earley (C.E.B.) with 1.11 lb/kWh at 47.8 per cent and 121,800 kW, Llynfi (South Wales Co.) with 1.07 lb/kWh at 71.2 per cent and 61,100 kW, while the highest thermal efficiencies were those of Battersea (B.C.) 26.32, Earley 26.34 and Llynfi 26.22 per cent.

The 82 oil engine stations (six fewer) generated 69.1 million kWh for 20,878 tons of fuel, or 0.67 lb/kWh, while three gas-engine stations (one more) produced just over one million kWh for 857 tons of fuel, or 1.86 lb/kWh.

Nearly 41 million kWh was generated by waste heat and/or waste gas in four composite stations. Three (two more) composite refuse destructor plants generated nearly 0.5 million kWh and used 951 tons of fuel. Water power stations increased by two to 40, generated 1,126.2 million kWh and (some of them being composite) consumed 607 tons of fuel. Water power represented 2.81, oil engines 0.17 and waste heat 0.1 per cent of the total kWh sent out.

An appendix to the returns shows that nine railway with four transport authority and four non-statutory stations were responsible for an output of 1,456.5 million kWh generated. They consumed 1.03 million tons of coal and coke and 19.792 tons of fuel oil.

The publication of national figures of this kind will in future be the responsibility of the Statistics Branch of the Ministry of Fuel and Power.

Brush Electrical Report

PAYMENT is announced by the Brush Electrical Engineering Co. of a dividend of 10 per cent on £800,000 of its ordinary stock. The recently created stock issued to Associated British Engineering does not rank for this dividend; the company retained £80,000 from the pre-merger profits of the companies which it sold. The last ordinary dividend was paid in 1945. The trading profit for 1948 was £673,547, against £563,244. Of this £144,707 has been provided for depreciation (against £119,264), bank loans and other interest take £100,593 (against £75,649). The net profit for the year after providing for directors' emoluments and auditors' remuneration is £425,116. Net adjustments arising from previous years amount to £40,156, giving a total of £465,272 (against 357,611).

The sum of £150,000 (against £20,000) has been provided on account of Brush Ljungstrom turbine reconstruction, a non-recurring charge; this, together with provisions made in 1946 and 1947 is estimated to cover all costs in this respect. It is again proposed to transfer £250,000 to general reserve. The carry forward is £18,220 (against £17,972).

E.P.E.A. Kent Section

THE annual dinner of the Kent Section of the Electrical Power Engineers' Association was held at the Royal Star Hotel, Maidstone, on 12th March, Mr. A. G. Salter presiding, Mr. T. Fallowes, labour relations officer, B.E.A., proposed the toast of the electricity supply industry, to which Mr. H. F. Knell, Kent manager, South-Eastern Electricity Board, replied. The toast of the Association was proposed by Mr. E. E. Hoadley, district manager, Maidstone, and Mr. F. Seddon, president of the Association, responded. Mr. Salter proposed "Our Guests," and Mr. C. Cameron-Kirby, deputy manager, Kent Sub-Area, replied.

Following the dinner there was dancing.

British Refrigeration Association

SPEECHES AT ANNUAL LUNCHEON

LT. COL. LORD DUDLEY GORDON, the president, took the chair at the annual luncheon of the British Refrigeration Association on 9th March at the Connaught Rooms, London, W.C.2; nearly 700 people attended. The principal guest was Lord Citrine, chairman of the British Electricity Authority, but owing to his being detained at a conference, Mr. H. F. Carpenter, secretary of the B.E.A., deputized for him until his arrival.

Lord Citrine proposed the toast of the Association, and in the course of his speech said that there was no question as to the desirability of developing refrigeration. It was making steady and rapid progress before the war but since the war it had been handicapped by material and labour shortages, purchase tax and restrictions on electricity supply. It was possible that there would at least be a relaxation of the electricity supply restrictions to enable the industry to go ahead.

Fair trading was the essence of the policy of the B.E.A. and Electricity Boards, but the definition of fair trading was a matter for discussion; it did not always operate among private traders. A great public corporation could not condone unfair competition. The B.E.A. supported the Electrical Fair Trading Council and might have become a member had not constitutional difficulties stood in the way. Their view remained that they should seek to establish the kind of relationships which were desired. They had tried to be sympathetic and understanding and co-operation had been their basic policy from the beginning.

B.E.A.'s Manufacturing Powers

He had given a public assurance that the B.E.A. regarded the manufacturing powers given to it only as a safeguard against any attempt to exploit the public. The inquiries to be held by the Monopolies Commission might allay any misgivings which the public might have. The B.E.A. and Boards were not only sellers of appliances, but also large buyers of plant and required prices to be equitable and fair. They had established joint committees with the associations concerned and this had resulted in a measure of mutual confidence. He did not say that the B.E.A. would never manufacture, but the matter lay in the hands of the B.R.A. and other electrical associations. Both the B.R.A. and the B.E.A. had a duty of public service and the confidence of the public would be a measure of their success. In conclusion Lord Citrine mentioned that the Association would be represented at the British Electrical Power Convention next June.

In replying to the toast, Mr. E. G. Batt, director and secretary of the Association, said that he was able to report continued progress. With the establishment of the new section for those engaged in the distribution and servicing of domestic refrigerators, there were now 504 individual members with a sectional membership of 683; in addition 45 applications for membership were under consideration. During the past year a sub-section of Section A was formed for manufacturers of sealed systems. The Association's work in connection with education and standardization was being intensified.

Production and Exports

In 1948 members' total production was valued at £15,764,116; of this £10,887,584 represented the home market and £4,876,532 exports. In 1935 refrigeration exports were valued at only £271,000. They were called upon to reach an end-1948 target of £270,000 per month; they actually achieved a rate of over £500,000. Their end-1949 target had been set at £450,000 a month and given proper and adequate supplies of materials, and the necessary import licences from overseas Governments, they would fulfil their task.

Before the war the production of commercial and industrial refrigerators was reasonably established, but domestic refrigerators consisted mainly of parts imported from the United States and assembled here. Now the domestic side was self contained; it no longer depended on imports and its products were to be found all over the world.

He appealed to the representatives of the Ministry of Supply, who were present, to recognize that the industry's achievements and the high material-conversion factor of its products were grounds for ensuring that its legitimate needs were properly satisfied. He expressed the Association's disappointment at the recent cut of 10 per cent in its steel supplies.

Mr. Batt went on to say that the first object of the Association was to promote and protect the interests of manufacturers and others dealing in refrigerating equipment, with due regard to the interests of the public. The Association did not control prices; these were fixed by the manufacturers in free competition with one another. Every member was required to give a twelve months guarantee to the user.

Recently certain domestic refrigerators had been offered with a five-year guarantee. Such a contingent liability could only be reflected in a higher initial price.

The question of guarantees had been reviewed by the makers of sealed system refrigerators. They had decided to maintain the one-year guarantee, but to offer in addition a "four-year protection plan" under the terms of which the customer would know at the time of purchase exactly what it would cost him to buy a replacement system during the second, third, fourth or fifth year. There would be a small charge for labour depending upon local circumstances. This offered the public a better deal than the so-called "five-year guarantee."

Mr. Batt said that he must emphasize to the British Electricity Authority that, apart from a few individual supply authorities, the distribution and servicing of refrigerating plant before vesting day was carried out by the firms which to-day represented the industry, and were well qualified for the work. He asked the Authority not to overlook that important fact in any future plan. In particular he asked that any hire-purchase terms fixed by the Authority would be such that all engaged in distribution could share in the business at the customer's wish.

They had been gratified to receive from the Authority an assurance that no fundamental changes would be introduced without prior discussion with the Association. They were satisfied that the best results would be obtained by using the existing organization, in co-operation with the B.E.A., rather than by independent action or duplication of organizations.

Lord Dudley Gordon proposed the health of the guests; he referred particularly to Lord Citrine, recalling the fact that among other things, he was the author of the plan for regional boards for industry; and to Mr. Don C. Bliss, Counsellor for Economic Affairs at the United States Embassy.

Mr. Bliss responded to the toast and said that after hearing Mr. Batt's report on progress he felt that American confidence in Great Britain was fully justified. He thought that competition between American and British manufacturers in foreign markets would be an advantage to both parties and to the public.

I.E.E. North-Western Centre

PRESIDENT'S VIEWS ON REGISTRATION OF ENGINEERS

STATE registration of electrical engineers to distinguish them from the "many brands of non-professional engineers" is not viewed with favour by Mr. T. G. N. Haldane, president of the I.E.E. Speaking at the first post-war dinner of the North-Western Centre of the Institution at Manchester he said that he could discern many disadvantages which would follow in its train. Membership of one of the three senior institutions was more and more regarded as the basic hallmark of the qualified professional engineer and would always be of far greater value than any that could be given by State registration. That was particularly so because of the disinterested services which the institutions considered it their duty to render for the community.

Mr. Haldane mentioned that that day (8th March) was the forty-ninth anniversary of the foundation of the Centre. He wished it "Many Happy Returns."

The I.E.E. had always been keenly aware of the problems arising from specialization and insisted that the training of professional engineers should be based on a broad background of education and the fundamental sciences. Papers issued by the I.E.E. from London were intended to be of general interest and so help to keep members of the specialized sections in touch with what their other colleagues were doing. The creation of specialized sections had enabled the I.E.E. to avoid over-specialization and the formation of separate institutions. A recently prepared memorandum on personnel of the electrical industry included carefully considered definitions both of duties and of qualifications of the professional engineer and those electrical technicians who were not members of the Institution. Broadly speaking, it was felt the facilities for the education of the professional engineer were reasonably satisfactory, subject to certain improvements, particularly with regard to increased facilities for practical training, but it was not felt that the facilities for the education and training of electrical technicians were satisfactory.

Dr. J. E. Myers, principal of the Manchester College of Technology, who proposed the toast of the I.E.E., commended its educational work and expressed the hope that electrical engineers would seek outlets for their endeavours in public service.

Mr. J. S. Peck, past chairman of the North Western Centre, gave the toast of "The City of Manchester."

The Lord Mayor of Manchester (Ald. Mary L. Kingsmill Jones), who was the only lady in the company of nearly 300, said the electrical engineers had an important part to play as bridge-builders between town and country. Brief speeches were also made by Mr. S. R. Mellonie (chairman) and Dr. F. A. Vick (Institute of Physics).

Industry and the House

Patents and Monopolies

By F. J. ERROLL,
M.A., A.M.I.E.E., M.P.

AFTER much delay the Government has introduced the Patents and Designs Bill. This Bill will give effect to many of the recommendations of the second and final reports of the Swan Committee. It is being introduced in the House of Lords and will reach the House of Commons only after it has passed through all its stages in the Upper House.

Coming as it does at a time when the new Monopolies Commission is about to commence its investigations into two important sections of the electrical manufacturing industry, electric lamps and cables, the Bill will serve to determine future industrial policy in quite a decisive way. One of the main purposes of the new Bill is to guard against the abuse of patent rights or the insufficient use of patented inventions.

It has long been a commonplace of Socialist thinking that large monopolistic groups buy up inventions and subsequently suppress them in order to protect their existing products and markets. If this practice does exist the new Bill will make it more difficult. It it does not exist the investigation of the Monopolies Commission will show it to be a "mare's nest."

The Commission can inquire into all restrictive practices but may not take any action other than the preparation of an adverse report. The new Bill gives Government Departments the power to take any necessary action. It has yet to be proved of course whether such restrictive practices exist, and whether indeed any Government action could persuade a newcomer into a field already well covered by strong existing undertakings.

Electricity Staff Compensation

A late evening debate on the Draft Electricity (Staff Compensation) Regulations showed the House to be anxious, as usual, for the fate of the few men who may be adversely affected by nationalization. The Parliamentary Secretary to the Ministry of Fuel and Power, in opening, indicated that the regulations covered all persons employed in the industry, some 130,000. In view of the immense generating and distribution programme some 3,000 additional staff would be required, as well as a further 25,000 manual workers in the course of the next five years. Mr. Robens felt that it was unlikely that the regulations would be required, but they had been produced to cover any individual in need.

Experience in Manufacture

Of a number of criticisms made, Mr. Palmer's were amongst the most useful. He pointed out that there has been a constant flow of technical staff from manufacturing companies to electricity undertakings. In many cases these men transfer in their forties and may obtain extremely good positions because of their experience in the manufacturing side. Under the regulations at present only service in the supply industry is allowed to be taken into account, and Mr. Palmer thought that manufacturing experience ought to be counted as well. Mr. Palmer also did not like the limitations of compensation to ten years after the Act. Compensation, if due, should be payable at any time, particularly as later reorganization might affect the most elderly men who would be unable to obtain other work.

Mr. Gaitskell, in his reply, resisted Mr. Bracken's suggestion that Lord Citrine's salary was excessive, and quoted the £12,500 a year salary paid by a Conservative administration to Lord Ashfield as chairman of the London Passenger Transport Board. In reply to most of the criticisms of detail, the Minister assured the House that the Board would handle all matters "in a perfectly reasonable way." In cases of doubt there could be an appeal to a tribunal, and the interests of applicants would be fully protected.

An adjournment debate on appointments to the boards of nationalized undertakings led to the usual attack and counter-attack on questions of patronage Mr. Michael Astor, the Conservative

Member for East Surrey, referred to the danger of the widely extended patronage which the Government now possessed, and mentioned a number of Socialist appointments. This was countered by Major Bruce, who referred to directorships received by members of the Opposition Front Bench. In winding-up, the Financial Secretary to the Treasury tried to make it clear that the best men would be appointed to fulfil the appointments, and the fact that any such man was in favour of nationalization was an additional reason why he should be selected. The mere fact that an individual was not in favour of nationalization would not prevent him from being offered an appointment if he was the best man for the job, but Mr. Glenvil Hall thought it was unlikely that such a man would accept an appointment.

Several M.P.s have been trying to put down questions to the Minister of Fuel and Power about the recent announcement of the Midlands Electricity Board that it was going to retail radio and television sets. Such questions are considered a borderline case between day-to-day administration and matters of policy. Accordingly they must be referred to the Speaker for his personal decision—a decision which could not be given until he had recovered from his illness.

Members have long complained amongst themselves about the poor quality of the lighting in the House of Commons, but it has been left to Mr. Beswick to question the Minister of Works. As a result the Medical Research Council and the Building Research Station are to examine the lighting to advise whether it causes eye-strain. Apparently the difficulty is that the House is at present dependent on a d.c. supply and an alteration can only be made when the supply is changed over. The need for scrupulous observance of electricity economy instructions makes the House even gloomier during winter evenings. Many passages are not lit at all, and even the Division Lobbies are sometimes half in darkness when divisions take place.

PARLIAMENTARY NEWS

By Our Special Reporter

REPLYING to Sir Patrick Hannon in the House of Commons last week the President of the Board of Trade (Mr. H. Wilson) said he had considered the report of the United Kingdom Engineering Mission to Canada with great care. They were greatly indebted to Sir Harry Gilpin and his colleagues for their most valuable report, which he had publicly commended to the attention of the whole engineering industry. They were doing everything they could to encourage the industry to apply, at once, its positive recommendations.

Village Supplies

Mr. Vane asked the Minister of Fuel and Power whether he would amend the instructions he had given to the Electricity Boards so that houses and villages which had been waiting for several years for electricity and which had no gas, should be given a priority equal to that given to new houses for connection to the public mains.

Mr. Gaitskell said that Electricity Boards had been asked to give supplies to new houses, farms and farm cottages and to existing houses where the present means of heating or cooking were worn out, where the absence of a supply was a cause of serious hardship, or where a supply was essential for health reasons. Owing to the shortage of materials and labour he regretted that he could not at the moment extend this list of priority classes.

Telephone Service

Mr. Bartlett asked the Postmaster-General whether he was aware that experiments had been made in the United States which had shown that telephone calls could be made on the same wires that carried electric current; and whether he would study the possibilities of thus supplying a telephone service to remote areas in this country.

Mr. Hobson said that the possibility of providing local telephone service over electricity transmission lines had been under examination for some time, but the scope of its use in this country was limited in view of the high cost of the terminal equipment in relation to the distances to be covered.

Mr. Grimston asked the Postmaster-General if he would give an estimate of the reduction in telephone revenue which would follow the removal of the surcharges imposed during the war.

Mr. Paling said it was estimated that on the current level of business the removal of the surcharges would reduce telephone re-

venue (including the value of services rendered to other Government Departments) by £16½ million a year.

Frequency Modulation

Mr. William Shepherd asked how much had been spent during the last twelve months on frequency modulation.

Mr. Hobson replied that during the past twelve months the B.B.C. had spent about £85,000 on very high frequency broadcasting. Very high frequencies could be used either with amplitude modulation or with frequency modulation. It was not yet decided which method would be used in this country, and the B.B.C.'s experimental station, now under construction, would at first provide for transmissions by both methods. He was statisfied that it was necessary to develop very high frequency broadcasting in order to relieve the shortage of long and medium wavelengths.

Nigerian Scheme

Mr. Rankin asked the Secretary of State for the Colonies if the engineer who was appointed at the end of 1947 to undertake hydro-electric surveys, but left Nigeria after three months, had since returned to complete the surveys; and how much of the proposed expenditure of about £1,500,000 on electrical development under the ten-year plan had actually been expended.

Mr. Creech Jones said the officer referred to returned to Nigeria last July to make further investigations. It was estimated that expenditure under the ten-year plan which had been drawn up, to the end of the current financial year would amount to nearly £300,000.

Staff Compensation

COMMONS APPROVE REGULATIONS

IN the House of Commons on 8th March, Mr. Robens, the Parliamentary Secretary to the Ministry of Fuel and Power, moved the approval of the Draft Electricity (Staff Compensation) Regulations, 1949 (see *Electrical Review*, 25th February, p. 324). He explained that the regulations covered all the 130,000 persons who were in the employ of the industry, but it was the view of the Ministry that there would be very little need for regulations for the bulk of those employed. He believed that recently Sir Henry Self had said that, so far as the generating programme was concerned, and not taking into consideration the distribution programme at all, in the next five years something in the nature of 3,000 staff would be required and an additional 25,000 manual workers.

So far as diminution of emoluments was concerned, a very large proportion of the staff was covered by the normal trade union and association agreements. The Ministry thought that any redundancy would affect only two classes of persons—certain directors not employed after vesting day and a few exceptional cases, mainly of the higher-paid staff. These regulations put a limit of compensation on earnings of £4,000 a year, so that the limit which, in accordance with the regulations was two-thirds of that sum, would mean that the maximum compensation for the highest paid would be £2,666. It was not intended that there should be any provision for compensation for any person with employment of less than 30 hours weekly. No person could receive compensation unless he was employed before vesting for a continuous period of not less than eight years after attaining the age of 18. They had to be sure that an individual who was to be compensated had his roots in the industry.

In addition to the two-thirds compensation which he had mentioned, there was the substantive compensation which was payable after three months, or in a case where immediate compensation had not been paid, from the date of the loss. This was not to exceed one-sixteenth of the loss for each year of service, except in so far as an individual was over 45 years of age, when he received an addition for added years. Compensation would be an annual sum paid weekly or monthly, according to custom or practice, but the Authority could award a lump sum payment, if the annual value did not exceed £26 and, if the individual himself so requested, a quarter of larger sums than £26 might be commuted. If there was a disagreement, the individual had the right to go before one of the tribunals, for which the Ministry of Labour would be responsible. The appellant could be represented by a representative of his trade union, by counsel or by solicitor. Reasonable expenses for travelling and subsistence would be paid, and also expenses of necessary witnesses. The Government felt that the regulations would provide a fair basis of compensation.

Col. Crosthwaite-Eyre said that the regulations would lessen the rights of the individual. The Government was deliberately whittling away these rights.

Mr. Palmer said it would be wrong to say that the trade unions were absolutely

satisfied with the regulations. They were modelled on a standard form set up for nationalized industries generally and did not necessarily take into account the special conditions of the electricity supply industry. One of the features of the industry was that it had always had a very close contact with the manufacturing side. An engineer, after many years' contracting work for a manufacturing company on construction of power stations, when he was 40 or 50 might be taken into the employment of a supply undertaking in an extremely good position because of his vast experience with the manufacturing side. Suppose that five days after vesting date it was found that there was no work for him. He would get no compensation because he had not had the necessary number of years in the electricity supply industry. He suggested that the Minister might look at the regulations to see if it was possible to take care of such cases.

He did not very much like the provision for no compensation after 10 years. He thought compensation should be payable at any time, provided the applicant could show that his loss of office or emoluments was a consequence of the Act. The suggestion that they should leave out of account altogether any diminution in emoluments under 5 per cent was a rather unfortunate feature. Then the eight-year qualifying period was unreasonably long, and might be shortened to five years, or less.

Mr. Selwyn Lloyd felt it to be the depth of meanness for a Government, the members of which refused to fix limits for the remuneration of members of public corporations, to fix a limit to compensation under these regulations. Col. Clarke thought it a pity that the regulations had not been part of the Bill.

Sir Arnold Gridley, speaking as a former employer of a great many people in the industry, thought that some of the conditions unreasonable. It was absurd to have such a limitation as 30 hours' work a week. If it was the Minister's desire that the British Electricity Authority and the Area Boards should have a contented body of workpeople, then provisions with regard to their future must be just and fair, if not generous. He appealed to the Minister to take back the regulations and have further consultation on them.

Mr. Bracken said that the maximum recognized salary of £4,000 a year was quite silly when one considered that the chairman of the British Electricity Authority was paid a salary of £7,500. He also appealed for reconsideration of the regulations.

Mr. Gaitskell said that there must be a qualifying period. The Government at first felt it should be 10 years, but they finally compromised on eight years, which seemed to be reasonable. They did not think it right that there should be payments of compensation on the basis of salary above the £4,000 level. The unions and associations had been consulted and, while he did not say they were satisfied in every detail, broadly speaking they were satisfied.

The motion to approve the regulations was carried by 133 votes to 58.

South African News

From Our Capetown Correspondent

THE Johannesburg City Council Finance Committee has recommended sending a Council official overseas to report on tenders for a £7,000,000 scheme for the extension of Orlando power station. It is also proposed to call for a report on the city's additional power needs for after 1959.

Cheap Electricity.—An officially contributed report in the *South African Journal of Economics* on the development and use of electricity in South Africa states that an abundance of easily mined coal deposits near the Rand has contributed not only to the rapid expansion of the power-supply industry but to the low cost at which electricity can be supplied. Coal is delivered to the Commission's power stations at an average of 13s 8d a ton. At Klip the cost is 4s 5d a ton, and electricity is produced at 0.0471d per kWh compared with 0.084d at the cheapest-producing American station for which figures are available.

Domestic Apparatus Supplies.—Import control is resulting in a diminishing supply of radio sets, refrigerators, washing machines and electric irons of American manufacture, and a number of electrical and radio firms are saying that they will have to close down. Many have already used their quota for 1949, said the secretary of the Association of Radio and Refrigerator Industries. He also stated that the Association is to discuss the situation and measures to meet it. Britain would be able to make up some of the deficiency, but agents for American articles would find great difficulty in obtaining British agencies. Under the import restrictions firms would be able to import only half their 1947 quantities. Firms which established themselves, or began to establish themselves, in that year would therefore be badly affected.

Public Lighting.—The city electrical engineer of Salisbury, Southern Rhodesia, states that his department will shortly begin a scheme to install lighting along 41 miles of streets under a three-year scheme.

COMMERCE and INDUSTRY

Refrigerator Plant Production: Employment Statistics

ACCORDING to the "Monthly Digest of Statistics" for February the production of domestic refrigerating machinery and parts in 1948 was valued at £5,545,000 (against £2,988,000 in 1947); of this total exports accounted for £2,941,000 (as compared with £828,000. The production of commercial refrigeration plant is given as £6,998,000 (£6,036,000), of which total £1,154,000 (£732,000) was exported. The figures for industrial refrigerators were: Production £2,024,000 (£1,644,000); exports £941,000 (£876,000).

Asea Electric Jubilee

Mr. J. Sigfrid Edstrom, who was chairman of Asea Electric, Ltd., from 1910 to 1940, presided at a luncheon at the Dorchester Hotel, on 11th March, to celebrate (in association with the Fuller Electrical & Manufacturing Co., Ltd.) the fiftieth year of the commencement of the business in this country. Mr. Edstrom proposed the health of the guests, and Sir Charles Hambro, K.B.E., replied on their behalf. The toast of "The Company" was proposed by the Swedish Ambassador, and the response was by Mr. H. S. Lamburd, managing director of the two associated companies.

In connection with the jubilee a handsome illustrated brochure has been produced dealing stage by stage with the progress of the business and containing interesting notes on the personalities associated with it.

Revised Employment Statistics

For the first time statistics of insured employees based on the new national insurance schemes are published in the *Ministry of Labour Gazette* (February). On the new basis the total working population in Great Britain at mid-1948 is estimated at 23,146,000. Besides the more comprehensive coverage, all part-time workers are now counted as full "units" instead of the previous method of counting two as one full-time worker. An industrial analysis estimates the number of employees in the electrical manufacturing, contracting and supply industries (mid-1948) at 731,070, compared with 626,160, upon the old basis. More detailed figures are given in the accompanying table.

Australian Engineers' Visit

A *Reuter* message from Melbourne states that four Australian engineers of the Victorian State Electricity Commission are coming to this country to buy £2,400,000 sterling worth of electrical plant for making coal briquettes.

E.I.B.A. Branch Meeting

A general meeting of the Bedfordshire and Hertfordshire Branch of the Electrical Industries' Benevolent Association will be held on 12th April, at 4.30 p.m., at the George Hotel, Luton. Those intending to be present should inform Mr. A. F. Plummer, of Shoolbred Electrical Co., Ltd., 1, Langley Street, Luton, acting chairman of the Branch.

Judge on Safety Devices

Francis Harold Hammond, an electrician, sued Andrews Toledo, Ltd., at Sheffield County Court recently for £200 damages for injuries received when a flash occurred as he was operating the 11 kV works switchgear. Mr. H. F. Yelland, of the Brush Electrical Engineering Co., Ltd., suggested that an explosion in an armoured cable near the switchboard dislodged air and dust particles, which made the air a conductor of electricity, and that as Hammond lowered the points of the contact breaker, arcing

INSURED EMPLOYEES IN GREAT BRITAIN IN JULY, 1948

Industry	Estimated No. of Employees Insured under National Insurance Schemes			Estimated No. Previously Insurable Against Unemployment		
	Males	Females	Total	Males	Females	Total
Elec. machinery	119,240	47,060	166,300	104,330	40,230	144,560
Wires and cables	38,580	24,270	62,850	34,170	20,820	54,990
Telegraph and telephone apparatus	27,990	16,740	44,730	23,940	13,980	37,920
Radio apparatus, gramophones	36,840	31,940	68,780	30,900	25,610	56,510
Radio valves and elec. lamps	16,900	20,650	36,950	13,760	17,040	30,800
Batteries and accumulators	10,900	8,750	19,650	9,480	7,460	16,940
Other elec. goods	69,120	52,560	121,680	59,590	44,450	104,040
Elec. wiring and contracting	62,920	6,380	69,300	56,660	5,250	61,910
Electricity supply	127,330	13,500	140,830	107,310	11,180	118,490
Total	509 820	221,250	731,070	440,140	186,020	626,160

took place. He thought Hammond should have known of the abnormal circumstances owing to the smoke.

For the plaintiff, Mr. M. Archibald submitted that there was nothing to indicate that the power was still on, and no locking device to prevent the operator turning the handle to move apart the contact points. It would be unreasonable to expect Hammond to fear that because the air had deteriorated arcing would result.

For the defendants it was said that the firm had a workable safety device, and something went wrong with the device itself. Hammond went to the device and, contrary to instructions, did something which produced effects which caused him injury.

Judge R. C. Essenhigh, giving judgment for defendants, said Hammond was a trained maintenance fitter who saw smoke coming from the switchgear. The obvious thing for him to have done was to get in touch with the people who controlled the main switch. He added that although one might ask for this or that safety device there were practical limits to such devices.

Radio Equipment Orders

An order has recently been placed with the General Electric Co., Ltd., for the supply of two-channel frequency modulated v.h.f. radio equipment to the Hong Kong police authorities. The contract, which has a total value of £25,000, covers a comprehensive mobile-to-fixed-station communication scheme embracing two areas, each of which will be provided with a separate communication channel and radio interlinking circuits.

The G.E.C. has also recently supplied two-channel frequency modulated v.h.f. radio equipment to the Ankara police. The scheme provides communication between cars and fixed stations, with such additional refinements as remote control of the headquarters station and linking into the Ankara telephone network.

Television Works Visit

The official Belgo-Dutch Television Delegation, which came to London at the invitation of the British Government, visited the Marconi research laboratories and works at Chelmsford, on 9th March, to see a demonstration of the company's latest television equipment operating on the standard of 625 lines, which has recently been recommended by British and Dutch manufacturers as the most suitable standard for television systems in countries not already committed to the existing British or American standards. The delegates were received by Sir George H. Nelson, chairman of the English Electric and Marconi group of companies, Sir Stanley Angwin, chairman of Cable & Wireless and consultant and adviser on research and development to Marconi's Wireless Telegraph Co., Ltd., and Mr. H. G. Nelson, director. During their tour the delegates joined in a discussion on television Standards opened by Mr. L. H. Bedford (Marconi's chief television engineer) and saw demonstrations of the new lightweight television equipment, which included studio and outdoor scenes. They also saw the transmitters under construction for two new B.B.C. television stations at Sutton Coldfield and in the north of England.

G.E.C. Granted Injunctions

In the Chancery Division, on 8th March, Mr. Justice Vaisey granted the General Electric Co., Ltd., an injunction restraining Genelec, Ltd., of Charlotte Street, W.1, and their agents from carrying on business in electrical apparatus under their present name or any other name which so closely resembles the plaintiffs' name or trade mark "Genalex" as to be calculated to deceive.

His lordship also granted the General Electric Co., Ltd., an injunction against J. A. Malik, trading as General Electric Repairs Co., and the General Electric Radio Co., from carrying on business in electrical apparatus in any way calculated to represent that the business or goods were in any way connected with the business or goods of the plaintiffs.

The defendants did not appear in either case.

Engineers' Guild

At a meeting of professional engineers held in Newcastle on 3rd March, it was unanimously agreed to establish a Northern Branch of the Engineers' Guild with headquarters in Newcastle, and a provisional committee was elected to deal with branch development.

French Trade Fairs

This year's Paris International Trade Fair (Foire de Paris) is being held from 21st May to 6th June. There will be a strong electrical section representative of all branches, including industrial plant, domestic appliances, rural equipment, lighting and telecommunication. A special feature is being made of television this year. The London office of the Fair is at 14-15, Rugby Chambers, 2, Rugby Street, W.C.1.

There will also be an electrical and radio section at the Lyons International Fair (23rd April to 2nd May). Intending visitors to this display can obtain information from Robert Brandon & Partners, Ltd., 45, Dover Street, London, W.1.

Damages Against Electrician

At Manchester Assizes last week, Mr. Edward Roberts, an electrician, was ordered

to pay £221 damages, with costs, to Mrs. G. Percival, whose daughter was found dead in bed in July, 1947, having succumbed to gas suffocation.

For Mrs. Percival it was stated that Roberts installed an immersion heater in her house in December, 1946. Upon the replacement of some floor boards in Miss Percival's room a gas pipe beneath them was pierced by a nail. Roberts stopped the hole with some electrician's paste but did not report the matter.

On a later occasion gas was detected; Roberts was sent for but did not come. Then the death of Miss Percival occurred and it was found that the paste was not stopping the hole properly.

The defendant denied negligence; he thought the hole had been properly blocked and did not think it necessary to tell the Percivals about it. He had heard nothing from them about an escape of gas.

In giving judgment, Mr. Justice Jones said that Roberts was a man of the highest respectability and reliability; he thought he had effectively stopped the hole, but evidence had shown that his method was not the correct one.

The Torquay Convention

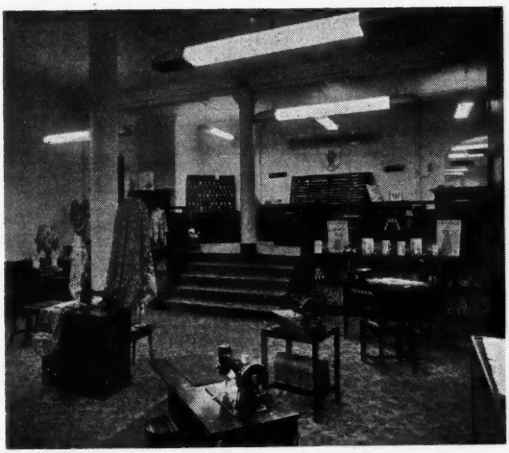
The summary of the programme of the British Electrical Power Convention in our 4th March issue (p. 360) gave the date of the opening of the exhibition and the Rotary Club luncheon as Tuesday, 14th June. Actually these events will take place on the previous day (Monday, 13th).

Sewing Centre Lighting

A recently completed fluorescent lighting installation at the Singer Sewing Centre, Piccadilly, Manchester, has to fulfil a dual role; first to provide attractive showroom lighting, and second to illuminate the classroom at the rear. In the showroom seven Miller-Hepworth twin-tube fittings, type "33," give an illumination intensity of 25 f.c., which is stepped up in the classroom to provide 32 f.c. on the working plane.

The unit used in the clasroom is type "44," and while the illumination is of a high intensity it is by no means unpleasant as the fittings have been fitted with detachable egg-crate diffusers in "Perspex," and "colour dynamics" have been applied to the decorations. Miller-Hepworth "Natralite" colour-true tubes are used throughout the Centre.

The installation was planned by Mr. R. H. Church, managing director of Miller Hepworth, Ltd., the contractors being E. M. Evans & Son, Ltd.



Fluorescent lighting at the Singer Sewing Centre, Manchester

Trade Announcements

FitzGibbon & Murray, Ltd., have appointed the following agents: Mid-Western Counties: Mr. J. B. Blake-Marsh, 95, Lindridge Road, Erdington, Birmingham, 23. South-Western Counties: Mr. A. M. Everett, 70, East End Avenue, Warminster, Wilts.

Mr. L. W. Swinnerton, is now representing Grampian Reproducers, Ltd., in Lancashire, Cheshire and N. Wales. His address is "Shadowlake," 190, Mather Avenue, Liverpool, 18 (telephone: Allerton 2741).

E. K. Cole, Ltd., have appointed Mr. W. S. Porteous (telephone: Dundee 6246) as their representative for Northern Scotland, and Mr. A. J. Deas (telephone: Edinburgh 87958) to represent them in South-East and South-West Scotland. Mr. J. B. Brown will continue as representative in Glasgow, Clydeside and Ayrshire.

Donald Ross & Partners, Ltd., have moved to 1-3, Arlington Road, London, N.W.1 (telephone: Euston 6061-2; telegrams: Twinner, Norwest, London).

The Mond Nickel Co., Ltd., Henry Wiggin & Co., Ltd., and Mond Nickel (Retire-

ment System) Trustees, Ltd., are removing their head offices, on 28th March, to Sunderland House, Curzon Street, London, W.1 (telephone: Grosvenor 4131; telegrams: Nictatio, Telex, London).

Cantie Switches, Ltd., has removed its London office to Alliance House, 10, Caxton Street, S.W.1 (telephone: Whitehall 9904).

Arcolectric (Switches), Ltd., now has available for dealers' window or counter, a display box containing nine assorted switches suitable for domestic appliances or radio equipment.

E. M. Tatton & Co., have removed to 59, Kew Bridge Road, Brentford, Middx.

The London office of **Brookhirst Switchgear, Ltd.,** is now at Alliance House, 12, Caxton St., S.W.1. Telephone: Whitehall 9904.)

Contract Price Adjustment Formulæ

The following are the latest figures for use in the B.E.A.M.A. contract price adjustment formulæ: Rates of pay: the rate of pay for adult male labour at 12th March is deemed to be 115s. Costs of material: The Board of Trade index figure for intermediate products at 12th March is 255.9 and is the figure for February.

Benjamin Sales Conference

The Benjamin Electric, Ltd., held a three-day sales conference at the Russell Hotel, London, from 9th to 11th March, which was attended by all their area managers and sales engineers. Mr. Guy Campbell, managing director, Mr. H. G. Campbell, assistant managing director, and Mr. A. E. Iliffe, director and general sales manager, were present throughout the conference, together with head office executives from the sales, engineering research, illuminating engineering service and publicity departments. On the last day of the conference a dinner was given to those attending, when all directors of the company were present.

Women and Purchase Tax

An approach has been made by the Women's Committee of the Housing Centre to the Chancellor of the Exchequer asking for the removal of purchase tax from washing machines, water heaters, vacuum cleaners, refrigerators and other domestic appliances. The Committee says that it appreciates the need for restricting spending power and for fuel economy but contends that there is as great a need for labour-saving appliances at prices which people with small means can afford. With regard to water heaters, it is pointed out that these can be switched off during the peak hours and that in the absence of other methods water will be heated in kettles with probably a greater consumption of fuel.

Portable Tool Users' Advisory Committees

S. Wolf & Co., Ltd., have instituted a scheme for closer contact between manufacturer and user. Periodical invitations are extended to firms using portable power tools and interested in their development, to be represented on a series of user panels. Visitors are able to see "Wolf" electric tools in course of design and manufacture, and there are subsequent discussions on possible improvements and developments.

Rubber Statistics

During January, states the Secretariat of the Rubber Study Group, the world production of natural rubber amounted to 125,000 long tons. Consumption was slightly in excess of this (127,500 tons). Synthetic rubber production was 42,500 tons and consumption 40,000 tons.

Works Visit

On 3rd March, a party of generating engineers, power station superintendents, and other British Electricity Authority officials attending Haddon Hall Hydro, Buxton, the new training centre of the B.E.A., visited the Derby works of International Combustion, Ltd. The visitors were led by Mr. J. W. Thomas, the chief educational and training officer, B.E.A., Mr. R. G. Bellamy, the deputy educational officer, and Mr. W. J. Hendry, the deputy public relations officer, and were received at the works by Mr. R. H. Gummer, director.

Catalogues and Lists

Davidson & Co., Ltd., Sirocco Engineering Works, Belfast.—Technical brochure on "Sirocco" cellular dust collectors.

Joseph Crosfield & Sons, Ltd., Warrington, Lancs.—Technical brochure on "Sorbsil" silica gel.

Revo Electric Co., Ltd., Tipton, Staffs.—Catalogue of street lighting equipment and three priced leaflets on cookers, cooker control units and consumers' service units.

Sun Electrical Co., Ltd., 118/124, Charing Cross Road, London, W.C.2.—Priced folder on domestic appliances.

Tricity Cookers, Ltd., 109, Kingsway, London, W.C.2.—Priced folder describing the Tricity 473A 3 kW cabinet type cooker.

General Electric Co., Ltd., Magnet House, Kingsway, London, W.C.2.—Illustrated brochure on soil warming equipment.

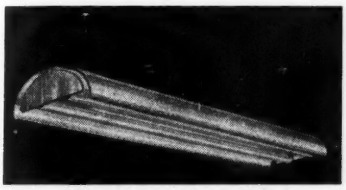
Stordy Engineering, Ltd., Midland Chambers, Princess Street, Wolverhampton.—Catalogue of industrial ovens and drying plant.

RECENT INTRODUCTIONS

NOTES ON NEW ELECTRICAL AND ALLIED PRODUCTS

Fluorescent Lighting Fittings

SEVERAL different types of "Perspex" fluorescent lighting fittings are now being made by MILLER-HEPWORTH, LTD., Lee Street, Oldham. The unit illustrated incorporates a medium open reflector and



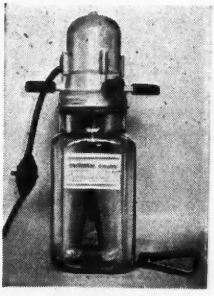
Miller-Hepworth "Perspex" fluorescent lighting fitting

extruded aluminium tie-bar forming a patented insulated channel for wiring. All the auxiliary equipment is completely contained within the reflector in order to facilitate maintenance. The end pieces are combined with the lampholder brackets. This particular model houses two 40 W 4ft tubes, but a similar unit taking only one tube is also available.

Butter Churn

The "Electrochurn," made by the CHURN COMPANY, Station Road, Hailsham, can be used both as a butter churn and a domestic mixer. The "Junior" model, which is suitable for all light mixing, has a capacity of ½ gal; the "Senior," which is more powerful and more suitable for

The "Electrochurn"



heavy mixing, takes up to 4 gal. The smaller unit costs £6 10s, plus £1 13s and the larger £14 10s; there is no purchase tax.

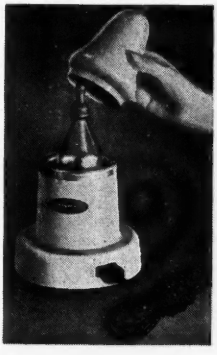
Burglar Detector

A device produced by the GENERAL ELECTRIC CO., LTD., Magnet House, Kingsway, London, W.C.2, will help to protect warehouses, shops and houses against burglars without exposing the watchman to any risk of attack. In each of the areas likely to be broken into a special type of microphone is installed. They are wired to an amplifier and loudspeaker in the watchman's post. Should an unusual sound be heard, the watchman would operate a simple switch and listen to each area in turn, an illuminated panel showing the locality. When he is satisfied that there are suspicious sounds, he can telephone for the police without leaving his post. The advantage of the system is that it does not depend on delicate alarm mechanisms.

Bottle Heater and Sterilizer

Both heating and sterilizing of babies' feeding bottles are possible with the new "Sterofeed" apparatus made by R. A. WILLIAMS (BIRMINGHAM), LTD., 447, Stratford Road, Birmingham, 11. It is also suitable for preparing semi-solid foods and for use as an invalid bedside unit. Heating of the food takes about five minutes and

"Sterofeed" babies' bottle heater and sterilizer



sterilizing about ten minutes. About forty feeds can be heated for one unit of electricity. The "Magnematic" thermal safety control, employed to prevent damage should the apparatus be accidentally left switched on, makes use of the change in magnetic properties occurring at the magnetic transformation point in temperature-sensitive material. A press-button is used for resetting, which cannot be effected until the heater has cooled sufficiently. The cut-out, which functions on both d.c. and a.c., also operates if the container is not properly seated or if the apparatus is severely jarred. The price is 57s 6d.

Fittings for Tubular Lamps

Two additions to the "WL" series of decorative lighting fittings made by LINOLITE, LTD., 158, Bishopsgate, London, E.C.2, employ a neat "Perspex" shade available in white, cream, bronze, gilt or

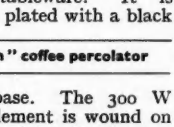
bright chrome. Accommodating 284 mm double-capped tubular lamps, they can be employed for upward or downward lighting, and are suitable for bedheads, mirrors, etc. Prices range from 35s 6d to 49s.

Household Appliances

Three additions to their range of domestic appliances are announced by H.M.V. HOUSEHOLD APPLIANCES, Hayes, Middlesex. The "Molton" coffee percolator Model CP.1 blends equally well with "period" or modern tableware. It is chromium plated with a black moulded handle and base. The 300 W nickel chromium tape element is wound on a serrated heat-resisting micanite former, with an asbestos pad below. A safety device is incorporated in the base. The price is £4 17s 6d.

"Molton" coffee percolator

A useful toast rack is incorporated in the lid of the Model TH.1 horizontal toaster, which is designed to take two slices of bread at once. A highly polished reflector plate, easily detachable for cleaning, directs the maximum amount of heat upwards. The consumption is 600 W. The toaster, which is finished in primrose and black enamel, costs 4 gns.



H.M.V. heat controlled iron

A new model of the heat-controlled iron introduced fourteen years ago, Model IC.5, is priced at £2 2s 6d a.c. and £2 5s d.c.

Improved Mixer

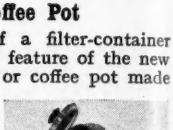
Features of an improved pattern of the "Turmix" electric mixer manufactured by E. J. BOWMAN (LONDON), LTD., 58, Paddington Street, London, W.1, are a different shaped cutter head permitting the cutting of certain dry foodstuffs, a blue heat-resisting glass container and a faster motor (14,000 r.p.m.). The price is £22, plus £5 10s purchase tax.

Dustproof Fluorescent Fitting

The entry of dust into lighting fittings used in coal mines must be avoided as far as is possible, and for this reason the GENERAL ELECTRIC CO., LTD., Magnet House, Kingsway, London, W.C.2, has produced a dustproof fluorescent fitting, incorporating a clear "Perspex" visor sealed with "Bostick," which is particularly suitable for the lighting of picking belts and the pit bottom. Brackets are arranged for wire suspension and provision is made for the fitting of armoured cable glands. Through wiring is facilitated by means of a large, robust terminal block. Equipped with a 5ft 80W fluorescent tube, this fitting is made to customers' orders only.

Tea and Coffee Pot

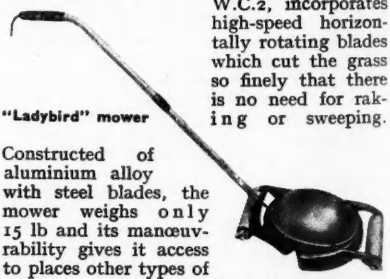
The incorporation of a filter-container attached to the lid is a feature of the new "Filtrite" electric tea or coffee pot made by MANCHESTER PRECISION TOOLS, 91-97, London Road, Manchester. The tea or coffee is placed in the container when the water is cold and is brewed when the pot boils. The pot, which is constructed of highly polished aluminium, is made in three sizes: 2 pint (700 W), 4 pint (1,250 W) and 8 pint (1,250 W). The respective prices are 85s (chromium plated 11s 6d extra), 105s (c.p. 15s extra), and 129s 6d (c.p. 17s 6d). The two larger models can be fitted with safety devices for 5s extra.



"Filtrite" tea and coffee pot

Lawn Mower

The "Ladybird" electric lawn mower manufactured by the A.M.I. LAWN MOWER CO., LTD., 27, Whitcomb Street, London, W.C.2, incorporates high-speed horizontally rotating blades which cut the grass so finely that there is no need for raking or sweeping. Constructed of aluminium alloy with steel blades, the mower weighs only 15 lb and its manœuvrability gives it access to places other types of mowers cannot reach. The universal motor, which runs at 8,500 r.p.m., is of 0.285 h.p. The mower is finished in green and grey by the "Dimenso" process. The price is 18 gns including purchase tax.

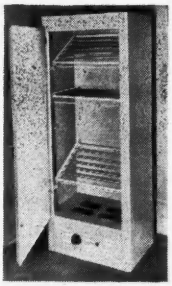


"Ladybird" mower

Drying Cabinets

The "Simpartex Star Model" drying cabinet marketed by EXICO, LTD., 30, Sloan

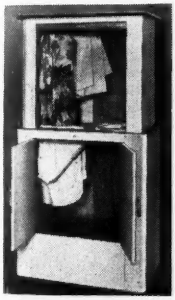
Street, London, S.W.1, measures 5ft 10in. by 2ft. 4in. by 1ft. 7in. and is constructed of heavy grade aluminium finished in stove enamel. The interior is fitted with hinged adjustable racks and removable bars.



"Simpartex Star Model" drying cabinet

For airing only ½ kW of heating is used, while for normal drying the loading is increased to 1½ kW, with 2 kW for ultra-quick drying or for heavy articles such as flannel garments, towels, etc., control being by means of a rotary four-position switch. The price of the cabinet is £28 10s, plus £6 17s 2d purchase tax.

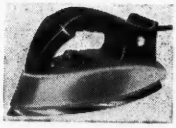
A drying and airing cabinet which, when closed, forms a table, is a new product of the CASSON ELECTRIC CO., LTD., 5, New Brown Street, Manchester, 4. A shelf forms two drying racks and a roller shutter in the front completely closes the front of the unit when used for airing or drying. Hot or cold air is passed through the unit by fan circulation at approximately 200 cu ft per min, the method of distribution of the air eliminating steam or condensation on the unit. The 2 kW heating element has a two-heat control, the fan being separately switched. The metal cabinet is finished in pastel cream enamel with black relief. The list price is £40 5s, plus £18 8s 1d purchase tax.



Casson kitchen unit used as a clothes drier or airer

Lightweight Iron

The "Master Mk 2" iron made by ELECTRO TECHNICAL INDUSTRIES, LTD., 15, Islington Park Street, London, N.1, is similar to the company's original "Master" iron but weighs only 4½lb instead of 5½lb. It is finished in cream enamel. The a.c. model costs 55s and the universal type 37s 6d.



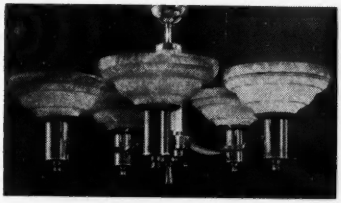
"Master Mk 2" iron

Toggle Switches

It is announced that two single-hole mounting double-pole miniature toggle switches have been added to the range of "S600" switches made by ARCOLECTRIC (SWITCHES), LTD., Central Avenue, West Molesey, Surrey. One is a single-throw switch rated at 3 A 250 V, and the other is double-throw rated at 2 A 250 V. The company has also introduced a retractive action line cord switch, rated at 5 A 250 V, which has been designed for fitting to electric lawnmowers, but is suitable for use with other portable electrical equipment.

Shadowless Lighting Fittings

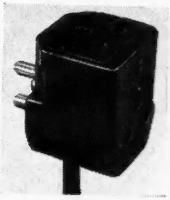
A feature of the majority of the new lighting fittings brought out by ALLEN & POPE, LTD., 14, Shacklewell Lane, Dalston, London, E.8, is that the lamps are all upright and that the shadows normally thrown by attachments used to hold the lamps have been eliminated.



Allen & Pope pendant fitting

Fused Adaptor

A three-way fused adaptor enabling three domestic appliances to be in use at any one time provided the total loading does not exceed 3 kW is available from D. S. PLUGS, LTD., Manchester, 5. It is fully shuttered, easy to wire and incorporates the D.S. fused pin with a rupturing capacity of 25 MVA at 400 V.



D.S. fused adaptor

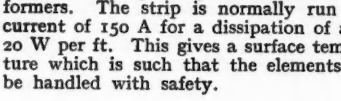
Greenhouse Heating

As an aid to electric soil heating, low-voltage frost prevention or space-warming equipment is being made by the LOHEAT FRAME CO., Eddington Works, Hungerford, Berks. A typical installation of this

equipment is in an 80ft by 22ft greenhouse at Holloway Nurseries, Faringdon, Berks. The heating elements are 125in. by 0.125in. galvanized steel strips running the full length of the house, which are heated at low voltage (maximum 30 V) from two 17.5 kVA transformers. A sensitive rod-type thermostat situated in each bay of the greenhouse exercises (within ±1 deg F) control over the elements through contactor gear in the primary circuit of the transformers. The strip is normally run at a current of 150 A for a dissipation of about 20 W per ft. This gives a surface temperature which is such that the elements may be handled with safety.

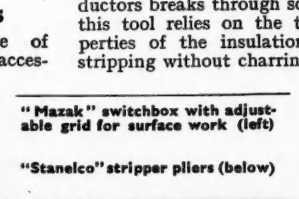
Die-Cast Conduit Accessories

Several additions to the range of "Mazak" zinc alloy die-cast conduit accessories for use with aluminium alloy conduit are announced by the GENERAL ELECTRIC CO., LTD., Magnet House, Kingsway, London, W.C.2. A switchbox has been introduced to accommodate "Mutac" silent switches of the surface, flush and semi-recessed types. They are available with adjustable grid for surface work, and are made in 1-, 2-, 3-, 4-, and 6-gang sizes. Top outlet inspection elbows and tees and conduit extension collars are also available. All of these accessories can be used with steel conduit.



"Mazak" switchbox with adjustable grid for surface work (left)

"Stanelco" stripper pliers (below)



Fan Heater

A portable fan heater for domestic use which provides warm or cool air circulation is offered by ELECTRO TECHNICAL INDUSTRIES, LTD., 15, Islington Park Street, London, N.1. Essentially it consists of a fan and a 2 kW "black heat" element housed in an attractive steel cabinet which is finished in pastel colours. The fan is operated by means of a single switch either at medium speed with the heating element switched on or at full speed with the element switched off. The appliance, which is priced at £6 15s, plus purchase tax, is available for all normal a.c. mains supply voltages.

E.T.I. "Ideal" fan heater

Stripper Pliers

Pliers designed to remove the insulation from plastic-covered wires are an addition to the range of "Stanelco" tools marketed by STANDARD TELEPHONES & CABLES, LTD., Cline Road, Bounds Green, London, N.11. While mechanical stripping weakens a conductor by "nicking," or in stranded conductors breaks through some of the strands, this tool relies on the thermo-plastic properties of the insulation to ensure clean stripping without charring the insulation or damaging the conductor. The jaws are heated from the 12 V secondary of a transformer, thus ensuring perfect safety to the operator. No switching is necessary and the pliers can be left connected without risk of damage or overheating. The power rating of the pliers is less than 10 W.

Fractional H.P. Motors

Silent-running fractional h.p. electric motors of the capacitor start type are now being made under the proprietary name of "Chetah" by WELDALL & ASSEMBLY, LTD., Berry Hill Factory, Droitwich, Worcs. These machines, which range from $\frac{1}{10}$ to $\frac{1}{3}$ h.p., are manufactured according to B.S.170/1939 and are available with solid foot, spigot or resilient mountings. Normally they employ sleeve bearings in totally enclosed frames, but if required ventilated machines can be supplied with ball bearings.

"Chetah" f.h.p. motor

FINANCIAL SECTION

Company News
Stock Exchange Activities

Reports and Dividends

The Jerusalem Electric & Public Service Corporation reports a profit for the year to 31st March, 1948, of £P.102,848, as compared with £P.115,824 for the previous year. Taxation requires £P.4,000, capital amortization £P.18,450, general reserve £P.16,346, contingency account £P.15,000, and renewal and depreciation £P.40,000. The preference dividend for the year is paid, but no distribution is proposed on the ordinary shares (against 6 per cent). The balance carried forward is £P.20,733 against £P.20,343 brought in).

The report states that in view of the heavy drain on liquid resources through substantial payment during the year to the Palestine Electric Corporation, and of the situation in Palestine, the directors are unable to recommend payment of a dividend on the ordinary shares. For the same reasons, the payment of the preference dividend for the half-year to 30th September last has been deferred.

Ericsson Telephones, Ltd., reports a trading profit for 1948 of £848,086, as compared with £424,544 for the preceding year, and after providing for depreciation, debenture interest and U.K. tax, etc., there is a net profit of £368,436 (against £200,544). General reserve receives £220,000, and it is proposed to pay an ordinary dividend of 17 per cent, and a bonus of 3 per cent, all tax free (same). The balance carried forward is £201,780 (against £136,050 brought in).

Electric & Musical Industries, Ltd., proposes to issue £460,000 4½ per cent £1 cumulative redeemable preference shares. This issue will replace the existing £460,000 of 6 per cent redeemable preference, which the company may redeem by 15th July next at a premium of 2s 6d per share. Existing 6 per cent preference shareholders will be able to convert into the new 4½ per cent preference.

The Barbados Electric Supply Corporation, Ltd., reports a trading profit for the year to 30th June last of £34,177, as compared with £34,048 for the previous year, and a net profit of £23,204 (against £23,805). The dividend for the year is maintained at 5 per cent, tax free, and £1,662 is carried forward (against £1,958 brought in).

Meadows-A.B.E. Agreement.—In return for the payment and guarantee of their preference dividends, Henry Meadows, Ltd., have granted Associated British Engineering, Ltd., options on the whole of their authorized but unissued share capital up to 1st September, 1950. Mr. Alan P. Good and Mr. Alexander Geddes, directors of A.B.E., Ltd., and of the Brush group, have been co-opted to the board of Henry Meadows, Ltd., and Mr. Hamill, chairman of Henry Meadows, Ltd., has joined the A.B.E. board.

The Greengate & Irwell Rubber Co., Ltd., reports consolidated trading profits for the year to 24th December of £634,810, plus other income of £1,368. After providing for taxation, £290,400, and depreciation £121,613, there is a balance of £224,165. The net profit of the parent company is £218,858 (against £192,973), and it is proposed to pay a final ordinary dividend of 1s 3d per share, making 15⅝ per cent for the year (same) and a dividend of 3d (25 per cent) on the deferred (unchanged). Reserve receives £130,000 and £193,493 is carried forward (against £148,073 brought in).

Oldham & Son Africa (Pty.), Ltd.—The subsidiary company of Oldham & Son, Ltd., Manchester, registered last December in Johannesburg in the name of Oldham & Son Africa (Pty.), Ltd., is being formed into a public company with an issued capital of £300,000 underwritten by the Whitehead Industrial Trust (S.A.), Ltd. It is stated that a substantial interest in this new undertaking will be retained by the English company.

S. Guiterman & Co., Ltd., state that the fears expressed in their circular letter to stockholders have proved well founded, and the accounts for 1948 will show a loss. The fixed half-year's 5½ per cent preference dividend is paid, but the directors state that in the circumstances no dividend on the ordinary stock is to be expected.

Associated Electrical Industries, Ltd., announces the private placing of £4,000,000 of 10-year 3¼ per cent unsecured notes at the price of 98¾. The proceeds of the issue will be used in the main to repay bank loans.

Calcutta Tramways Co., Ltd., has declared an interim ordinary dividend of 2½ per cent, tax free. The last ordinary payment made by the company was 10 per cent, less tax, for 1945.

"Composite" Companies' Securities

The Minister of Fuel and Power, acting under Section 25 of the Electricity Act, 1947, has made the Electricity (Composite Company) (Securities) Regulations, 1949.

(H.M. Stationery Office, 1d.) These entitle the holder of debenture stock or preference stock or shares of a composite company whose electricity undertaking has been acquired to require the company to transfer to him such amount of the electricity stock received as is attributable to the value of his holding.

New Companies

Barr's (Sheffield), Ltd.—Registered 2nd March. Capital, £7,500. Electrical engineers, general electrical installation contractors, manufacturers of electrical appliances, etc. Directors: P. L. Barr, Mrs. Edith Barr, J. Bolt and R. P. Middleton. Regd. office: 2-4, Broad Lane, Sheffield.

George W. Chapman, Ltd.—Registered 1st March. Capital, £4,000. To acquire the business of radio and television engineers and dealers carried on by G. W. Chapman and N. Turner, at Amersham, as George W. Chapman. Directors: G. W. Chapman and N. Turner. Regd. office: Radio House, Hill Avenue, Amersham.

Capel Electrical & Radio Co., Ltd.—Registered 1st March. Capital, £1,500. G. C. Peters signs as director. Regd. office: 4, High Street, Dorking.

Baker & Message, Ltd.—Registered 1st March. Capital, £2,600. Electrical, radio and general engineers, garage and service station proprietors, etc. Directors: G. J. Message and C. G. Davies-Gilbert. Regd. office: Gardner Street, Hurstmonceux, Sussex.

Telemeter Laboratories, Ltd.—Registered 5th March. Capital £1,000. To design, produce, test, calibrate and install electronic, electrical and mechanical remote indication apparatus, etc. Directors A. R. Thomas and C. S. Clench. Regd. office: 12, Henrietta Street, Strand, W.C.2.

Scotia Lampworks (Scotland), Ltd.—Registered in Edinburgh 1st March. Capital £1,000. Manufacturers of and dealers in electric lamps and electrical apparatus, etc. Directors: T. Mitchell and Isabella M. Adamson. Regd. office: 141, Bath Street, Glasgow.

Trent Electrical Co., Ltd.—Registered 3rd March. Capital £2,500. Electrical engineers and general electrical installation contractors, etc. H. Green is the first director. Regd. office: 23, King Street, Nottingham.

R. Cook & Co. (Electrical), Ltd.—Registered 3rd March. Capital £2,000. To acquire the business carried on by R. G. W. Cook at 140, Robin Hood Lane, Hall Green, Birmingham, and to carry on the business of manufacturers of and dealers in electrical goods, television and wireless sets, refrigerators, etc. Directors: D. E. Cook and R. G. W. Cook. Regd. office: 140, Robin Hood Lane, Hall Green, Birmingham.

Rentalec, Ltd.—Registered 15th February. Capital £100. Hirers, maintainers and repairers of and dealers in electrical equipment of all kinds, radio apparatus, etc. Subscribers: R. J. F. Booth and P. H. Hazleman. Solicitors: Philip Conway Thomas & Co., 19-20, Bolton Street, W.1.

A. E. Randall (Electric), Ltd.—Registered 16th February. Capital, £500. Electrical engineers, agents, consulting engineers, electricians, etc. Directors: B. Holdsworth and A. J. H. Farmer. Regd. office: 20, Eldon Street, E.C.2.

Terrospan, Ltd.—Registered 19th February. Capital £100. Consulting, mechanical and electrical engineers, etc. Directors D. N. Manton and D. L. Manton. Regd. office: 279, Yardley Road, Yardley, Birmingham, 25.

Haigh & Ringrose, Ltd.—Registered 8th March. Capital £2,000. Electrical engineers and contractors, etc. Directors: D. E. Spence, T. Haigh, J. W. Ringrose, J. Cresswell and K. T. March. Regd. office: 400, Linthorpe Road, Middlesbrough.

Ravenscourt Electrical & Radio Co., Ltd.—Registered 9th March. Capital £100. Subscribers: M. Gottlieb and O. R. Boyle. Solicitors: Canter Hellyar & Co., 3-4, Lincoln's Inn Fields, W.C.2.

Winding-up Petition

G. & G. Electrical Engineers, Ltd.—A petition for the winding-up of this company has been presented to the High Court by Bryterlite Electrical Co. (London), Ltd., and will be heard in London on 21st March.

Liquidations

The Llangollen & District Electric Light & Power Co., Ltd.—Special resolution (pursuant to Section 141 (2) of the Companies Act, 1948. Winding up voluntarily. Liquidator, Mr. N. Johnson, of Warmsley, Henshall & Co., 29. Eastgate Row, North, Chester.

Bankruptcies

L. O. Richardson, The Bungalow, Norway Lane, Littlehampton, electrical contractor.—Trustee, Mr. A. E. Orbell, 6 & 7, Old Steine, Brighton, 1, appointed 7th March, 1949.

J. Green, of Radio & Electrical Service, Maurice Road, Canvey Island, Essex.—Last day for receiving proofs for dividend 25th March. Trustee, Mr. J. M. Clarke, 20, Eaton Place, London, S.W.1.

STOCKS and SHARES

IT cannot be said that Stock Exchange markets show noticeable improvement, either in the volume of business or in the general tendency of price fluctuations. The atmosphere in the House is one of cold depression, the chilliness being accentuated last week by the provision of new windows, in the dome and roof, which had been previously broken, and whose replacement caused 50 per cent of Stock Exchange members to wear overcoats and hats during business hours. Investment is acting extremely cautiously in regard to existing securities, yet it is noteworthy that new issues which offer genuine attraction are promptly, and heavily, oversubscribed. The prices of industrial shares are mostly lower now than at any time since the Berlin crisis developed last summer. Compared, however, with the experience of some markets, the retreat of electrical equipment shares has been orderly.

Capital Issues

In view of the company's standing, it came as no surprise that Electric & Musical Industries propose to replace the £460,000 redeemable 6 per cent preference stock with a lower-yielding charge. Holders of the former are to receive notice of repayment at a premium of 2s 6d in July, and to be offered conversion into a new 4½ per cent preference issue. A further £540,000 of the same stock is to be created for future requirements. The new shares will be redeemable at 22s 6d from 1959 onwards. Dealings were due to begin on the Thursday of this week, in Lodge Plugs 5s ordinary shares: particulars were published last Monday. The opening price was expected to be about 25s 6d. Associated Electrical Industries are adopting the popular method of raising capital by the issue of unsecured notes rather than by increasing the permanent capital. An amount of £4 million notes has been privately placed at a price of 98¾. They bear interest at only 3¼ per cent, are repayable in ten years, and will be used largely to replace present bank loans.

Communication Stocks

One of the few markets in which anything like activity is noticeable at the present time is that for Cable & Wireless stocks. The price of the ordinary fell to 222 before a fresh wave of buying lifted it to 229½, a 4 point gain on the week. The preference has gone back to 121. Globe Telegraph & Trust ordinary at 47s have lost a shilling. In this market, Anglo-American Telegraph preferred stock at 110 is 5 points lower, the deferred losing 10s at 14½. Oriental Telephones shed 2s 6d, to 47s 6d. Great Northern Telegraph remain weak at 16½. International "Tel. & Tel." at 15 show a dollar gain.

Matters of Interest

Switchgear & Cowans' new shares finished at only 6d premium on the offered price of 14s, and the old shares have receded to 15s 3d. A line is on offer at about that price, to yield 6½ per cent on last year's 20 per cent dividend. This year's payment goes only to the old shares, after which the two issues will rank equally. Victoria Falls preference relapsed to 19s 9d on the ordinary stockholders' rejection of the company's proposal to repay the shares at a premium of 1s 6d in the winding-up: the price of the ordinary moved up correspondingly to 7½. The market has on offer some 20,000 Rheostatic 4s shares at 11s 3d, the yield, on the last payment of 20 per cent, being £7 2s 3d per cent. Henry Meadows rose to 9s 6d on the agreement with Associated British Engineering, but reacted to 8s 6d.

Week's Price Changes

Chloride Electrical at 95s are 5s down, Aron at 45s and London Electrics, 45s, lost 3s 9d. Tube Investments fell 2s 6d to 6$\frac{3}{16}$, Mather & Platt to 49s 6d. In the radio equipment group, Pye at 28s 3d are 1s 9d lower and E. K. Cole at 14s 6d are down 1s 6d. De la Rue, 35s, Telegraph Construction, 46s 6d, and Babcock, 68s 6d are easier. A number of other falls resulted in prices being 9d-1s 6d down as compared with a week ago. On the other hand, the few improvements included British Electric Traction deferred 1845, a gain of 60 points, and there are rises of 6d in General Electric, 88s, Automatic Telephone, 63s 9d, E.M.I., 18s 6d, Halls Telephone, 11s 9d, and Scophony, 3s. Vactrics at 17s 6d are 1s 3d higher.

Ericsson Profits

Something out of the common is required, at present, to lift a quotation in the industrial market. Ericsson Telephones' profits statement achieved that distinction, the price of the 5s ordinary shares rising $\frac{1}{8}$ to 45s on the disclosure of trading profits almost exactly double the previous figure. Net profits, after taxation and dividends on the debenture and preference stocks, come out at £360,000, of which the 20 per cent tax-free ordinary dividend requires only £75,000. General reserve receives £220,000, against £40,000 last time, and the carry-forward is raised to over £200,000. The dividend is still 5 per cent below the pre-war rate. It affords a yield of 2½ per cent net, equal to just over 4 per cent less tax at 9s, at the present price of the shares.

Electricity Supply

Use of Kepier Site : German Plant Extensions

THE British Electricity Authority has informed the Ministry of Town and Country Planning that the generating capacity of the Northern Division has been reviewed in relation to demand, and it is evident that two more power stations will be needed in Co. Durham by the end of 1953. Efforts are being made to discover the most suitable sites, but if these are unavailing it may be necessary to ask permission to use the site at Kepier, Durham City. About five years ago a decision by the North-Eastern Electricity Supply Co., Ltd., to build a power station at Kepier aroused considerable opposition on the grounds that it would impair the amenities of Durham and mar the view of the Cathedral. A public inquiry was held, when it was stated that alternative sites had been considered, but were not suitable. Opponents of the plan claimed that the needs of the county could be met by extending the Dunston and North Tees stations. Since then additions to both these stations have been in progress, but it has never been admitted that the extensions could obviate the need for a new power station for the county.

Welsh Water Power

In a report on the B.E.A.'s proposals for hydro-electric development in North Wales a sub-committee of the Council for the Preservation of Rural Wales states that, with regard to the Dolgarrog scheme, it opposes the taking of any water from the Afon Ro and any further water from the Afon Dulyn. In its opinion the amount of water which could be obtained during the greater part of the year would not justify the inevitable loss of amenity and physical necessities which would result. The sub-committee accepts the Maentwrog scheme in principle, but says that, in the absence of more detailed information, it cannot express a final opinion.

Validity of Aberdeen Increase

In reply to a memorial submitted to them by Aberdeen Corporation, Mr. J. Cameron, K.C., Dean of the Faculty, and Mr. J. R. Philip, K.C., stated that in their opinion the 22½ per cent increase in electricity charges imposed by the North of Scotland Hydro-Electric Board last June was *ultra vires*. The grounds given were that the rates fixed were neither a block tariff nor approved by the Secretary for Scotland; in the absence of a block tariff the Secretary for Scotland could not competently approve the increase; and the rates were fixed before the creation of the full statutory machinery under the Act.

The Board has replied that formal approval of the revised charges was given by the Secretary for Scotland on 9th June before the public announcement of the increase. The revisions, which were necessary to meet losses being incurred by the Aberdeen undertaking, were submitted to representatives of Aberdeen Town Council on 5th June, and agreement was reached on a 22½ per cent increase. For the nine months ended 31st December there was still a substantial loss notwithstanding the increase.

Power Station Near Airfield

Agreement has been reached between the Air Ministry and the Ministry of Fuel and Power whereby construction of the proposed generating station at Bold, near Wigan, is to proceed although it will mean restricted use of Burtonwood airfield. It is expected that the first half of the station will be completed by 1954.

Electricity Output

The Ministry of Fuel and Power statement for the week ended 4th March shows that 963.6 million kWh was sent out for public supply from solid-fuel fired stations, as compared with 916.2 million kWh in the preceding week and 937.2 million for the week ended 6th March, 1948. Stocks of coal at electricity undertakings at 5th March totalled 3,369,300 tons.

German Power Plans

Plans have been announced by the bizonal authorities in Germany for the construction of twenty new power stations and the extension of others as soon as possible. This will raise the present generating plant capacity by 1,236 MW, or 20 per cent. Among the existing plants to be extended is the Goldenberg station, on the Cologne brown-coalfield; 340 MW of plant will be installed, raising the station's rating to 800 MW. Later plans envisage a further 40 generating stations which will raise the capacity from the present 6,000 MW to 15,000 MW.

In reporting these proposals the *Manchester Guardian's* Düsseldorf correspondent says that finance will present a difficulty. The first part of the scheme is expected to cost about 613 million marks.

Next Week's Events

Monday, 21st March

BIRMINGHAM.—Grand Hotel, 6.15 p.m. Birmingham Electric Club. Annual general meeting. "The Lighter Side of C.I.G.R.E., Paris, 1948," by H. C. Fox.

LEWISHAM.—S.E. London Technical College, 8 p.m. A.S.E.E. South East London Branch. Annual J. and P. Lecture, "Cables," by P. M. Hollingsworth.

LIVERPOOL. — Royal Institution, Colquitt Street, 6.30 p.m. I.E.E. Mersey and North Wales Centre. "Behaviour of High-Voltage Solid-Type Cable Accessories in Service," by C. J. Armstrong and C. T. W. Sutton.

LONDON.—Savoy Place, W.C.2, 5.30 p.m. I.E.E. informal meeting. Discussion on "Centralized Control and Indication in Power Stations."

Charing Cross Hotel, 7.30 p.m. Institute of Welding (South London Branch). Annual dinner.

Waldorf Hotel, W.C.2, 6.45 p.m. Institution of Works Managers. "The Factories Act," by T. H. Threlkeld.

Northampton Polytechnic, E.C.1, 5.30 p.m. Electrodepositors' Technical Society. "Recent Developments in Low Tension Power Supply," by D. Ashby.

NEWCASTLE-ON-TYNE.—King's College, 6.15 p.m. I.E.E. North-Eastern Radio and Measurements Group. "Printed Circuits, including Miniature Components and Sub-Miniature Valves," by J. E. Rhys-Jones and G. W. A. Dummer.

STOCKPORT.—White Lion Hotel, Underbank, 7 p.m. A.S.E.E. Stockport Branch. "Modern Cables," by W. H. Lythgoe.

Tuesday, 22nd March

COVENTRY.—Coventry Electric Club. "Electricity in Agriculture and Horticulture," by F. E. Rowland.

GLASGOW.—Royal Technical College, 7 p.m. I.E.E. Scottish Centre. "The Economical Utilization of Electricity in Great Britain," by R. B. Giles.

LEAMINGTON SPA.—Ashbourne Hill. Institute of Welding and British Welding Research Association. Conference on Welding as an aid to the Saving of Steel. (Conference continued until 25th March.)

LEEDS.—Yorkshire Electricity Board Offices, 1, Whitehall Road, 6.30 p.m. I.E.E. North Midland Utilization Group. "Waterworks Power Plant Practice: The Comparative Costs of Steam, Diesel and Electrically Operated Machinery," by T. P. Wakeford.

LONDON.—Savoy Place, W.C.2, 5.30 p.m. I.E.E. Measurements Section. Discussion on "Magnetic Amplifiers." Opened by F. H. Belsey.

MANCHESTER.—Engineers' Club, Albert Square, 7 p.m. I.E.E. North-Western Centre. Annual University Lecture on "The Early Metal Trades and the Beginnings of Mechanical Engineering in Lancashire," by Dr. G. H. Tupling.

NOTTINGHAM.—Y.M.C.A., 6.30 p.m. I.E.E. East Midland Centre. "Some Operating Experiences with High-Pressure Steam Power Plant," by W. N. C. Clinch. (Joint meeting with the East Midland Branch of the Institution of Mechanical Engineers.)

Wednesday, 23rd March

FARNBOROUGH.—R.A.E. Technical College, 7.30 p.m. Joint meeting of I.E.E. Southern Centre and the Southern Branch of the I.Mech.E. "Some Recent Developments in the Technique of Radio Valve Manufacture," by J. W. Davies, H. W. B. Gardiner and W. H. Gomm.

LANCASTER.—Storey Institute Technical College, 6.45 p.m. I.E.E. North-Western Centre. "Substations, with particular reference to Yorkshire Practice," by L. H. Fuller and C. R. Clarke.

LONDON.—I.E.E. London Students' Section, 2 p.m. Visit to Johnson & Phillips, Ltd., Charlton.

At the Institution of Civil Engineers, Great George Street, S.W.1, 6.30 p.m. Joint meeting of I.E.E. London Students, I.C.E. London Students and London Graduates of the I.Mech.E. Three short papers on "Road Transport."

MANCHESTER.—Engineers' Club, Albert Square, 7 p.m. A.S.E.E. Manchester Branch. "Power Factor Correction by Capacitors," by F. D. Wild.

College of Technology, 6.30 p.m. Institution of Electronics, N.W. Section. "Photo Electric Multipliers," by S. Rodda.

SHEFFIELD.—City Hall, 7 p.m. I.E.E. Sheffield Sub-Centre. Faraday Lecture on "Television," by Sir Noel Ashbridge and H. Bishop.

TAUNTON.—Electric House, 2.45 p.m. Joint meeting of I.E..E Western Supply Group and the South-Western Sub-Centre. "The Lightning Protection of High-Voltage Overhead Transmission and Distribution Systems," by H. M. Lacey.

Thursday, 24th March

DUBLIN.—Trinity College, 6 p.m. I.E.E. Irish Branch. "The Application of Carrier Telephony to Co-axial Cables," by A. J. Litton.

LONDON.—Savoy Hotel, W.C.2, 6.30 for 7 p.m. Electrical Wholesalers' Federation. Annual dinner.

SOUTHSEA.—Royal Beach Hotel, 6.30 for 7 p.m. I.E.E. Southern Centre. Annual dinner and dance and visit of president.

Friday, 25th March

LONDON.—Storey's Gate, St. James's Park, S.W.1, 6 p.m. Institution of Mechanical Engineers. Annual general meeting.

NEWCASTLE-ON-TYNE.—King's College, 7 p.m. I.E.E. North-Eastern Students' Section. Students' lecture. "The Dependence of Physics on the Engineer," by B. S. Gossling.

Saturday, 26th March

LEEDS.—Yorkshire Electricity Board offices, Whitehall Road, 2.30 p.m. I.E.E. North Midland Students' Section. Students' lecture. "The Dependence of Physics on the Engineer," by B. S. Gossling.

Hotel Metropole, 6.30 for 7 p.m. Association of Mining Electrical and Mechanical Engineers (Yorkshire North-West Branch). Annual dinner.

Patents and Designs

PROVISIONS OF NEW BILL

THE recommendations made by the Swan Committee on the Patents and Designs Acts in its first interim report were implemented by the Act of 1946. In the new Bill introduced into the House of Lords last week (H.M. Stationery Office, 1s 3d.) proposals made by the Committee in its second and final reports are largely dealt with. The more important amendments of existing law proposed are as follows:—

Clause 1 provides that an application for a patent may be made by the assignee of the inventor, and Clause 10 similarly provides that an application made by the inventor may be taken over at any stage by his assignee. At present, the application must generally be made and prosecuted by the inventor who, having parted with his interest, may be no longer concerned or readily available.

Clauses 3 and 4 introduce a new system of dating patents and allowing priority based either on provisional specifications or on earlier applications in countries belonging to the International Convention for the Protection of Industrial Property. It is proposed that the date of the patent should be the date of filing of the complete specification containing a full disclosure of the invention and not, as is the case at present, the date of the first application in this country or in a Convention country. The provisions will allow the inclusion in all complete specifications of any development of or additions to the invention which may have been made after the first application was filed and will establish a system of priority dates agreeing more closely with the systems in force in other countries.

New Grounds for Opposition

Clause 6 provides that the grant of a patent may be opposed on the new grounds that the invention has been previously used or lacks inventive merit or subject-matter. The intention is to provide a check against the grant of certain worthless patents which cannot be refused under the existing law.

Clauses 15 to 23 provide remedies for the abuse of patent rights or insufficient use of patented inventions. The remedies available under the present law, namely, the grant of a compulsory licence to work the invention or the endorsement of the patent "licences of right" so that anyone can obtain a licence as of right or, in special circumstances, the revocation of the patent, are retained; but the circumstances in which they can be resorted to are extended to cover cases where the invention is not being worked to the fullest possible extent, or where an export market is not being supplied or the working of another patent is hindered by the refusal of the patentee to grant a licence on reasonable terms. Provision is made for action by a Government Department in the public interest, particularly in cases reported on by the Monopolies and Restrictive Practices Commission.

Clauses 26 to 29 re-enact with modifications the statutory provisions governing the use of patented inventions for the services of the Crown. It has been held that, when the patentee himself uses the invention for such services, a Government Department cannot give him an authority so as to relieve him in respect of such use from his contractual obligations to other persons, and it is now proposed to provide for this relief. When others are authorized to use the invention, the patentee will in general receive compensation, but it is proposed that he should be liable to share this with any other person with contractual rights.

Infringement Proceedings

Clauses 32 to 35 deal with proceedings relating to infringements of patents. It is proposed that an exclusive licensee may take proceedings in his own name and that a manufacturer may obtain a declaratory judgment to resolve doubts whether a particular manufacture which he proposed to undertake would infringe a specified patent. Clauses 36 and 38 give the Comptroller jurisdiction to resolve, subject to certain limitations, disputes concerning infringements of patents and to determine rights in inventions made by employees.

Clauses 40 and 41 deal with the registration of designs. At present, registration gives protection in respect of the application of the design to any article in the class in which the registration is made, and it is now proposed that registration should be in respect of one article, or, in certain cases, of a set of articles.

Clause 46 provides that all appeals from the Comptroller's decisions shall go to the Patents Appeal Tribunal. At present appeals in cases relating to patents already granted go to the High Court. Clause 47 provides for the appointment of an additional judge who will deal primarily with patent cases.

There has also been published a White Paper containing drafts of two new Bills for the consolidation of the legislation relating to patents and to registered designs (Cmd. 7645, Stationery Office, 2s. 6d).

NEW PATENTS

Electrical Specifications Recently Published

The numbers under which the specifications will be printed and abridged are given in parentheses. Copies of any specification (2s. each) may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2.

1940

8372. Rosa, L., and Zakarias, I.—Electrical devices for testing the functions of living bodies. 10th May, 1939. (618405.)

1944

8063. Standard Telephones & Cables, Ltd. (International Standard Electric Corporation).—Radio directing methods and system. 28th April, 1944. (618497.)

22227. Sperry Gyroscope Co., Inc.—Radio navigation systems. 10th November, 1943. (618419.)

25671. Bendix Aviation Corporation.—Electrical signalling systems for remote indication or control. 16th December, 1943. (618411.)

1945

5314. Hopkins, C. R.—Electric heaters for windscreens and windows. 2nd March, 1945. (618585.)

12149. British Thomson-Houston Co., Ltd., and Welch, D. F.—High-frequency electrical ignition apparatus. 15th May, 1945. (618587.)

13201. Standard Telephones & Cables, Ltd., Chatterjea, P. K., and Houghton, L. W.—Arrangements for locating obstacles by electromagnetic waves. 25th May, 1945. (Addition to 586833.) (618499.)

16956. Compagnie Générale d'Electricité.—Double-current audio-frequency telegraphic transmission systems. 12th March, 1943. (618589.)

27357. Moore, W. E.—Furnace electrode regulators. 18th October, 1945. (618501.)

28041. Dehmel, R. C.—Electrical arrangements for converting from Cartesian into polar co-ordinates. 25th October, 1944. (618421.)

32802. Marconi's Wireless Telegraph Co., Ltd.—Pulse-type multiplex communication system. 17th July, 1943. (618770.)

34711. Philco Radio & Television Corporation.—Electrical cavity resonators. 12th July, 1944. (618506.)

35315. Marconi's Wireless Telegraph Co., Ltd.—Electron-discharge devices. 22nd July, 1944. (618427.)

1946

2842. Okolicsanyi, F.—Apparatus for converting nuclear energy into electric energy. 29th January, 1946. (618508.)

4825. Standard Telephones & Cables, Ltd.—Method of and apparatus for spraying counter-electrode alloy on rectifier discs. 19th February, 1945. (618597.)

6392. Soc. le Carbone-Lorraine.—Hard-surfacing electrodes. 10th March, 1945. (618429.)

6803. Western Electric Co., Inc.—Electric-discharge devices. 29th December, 1944. (618430.)

6875. Triggs, W. W. (Farnsworth Television and Radio Corporation).—Radio communication and signalling systems. 5th March, 1946. (618775.)

8173. Procédès Sauter.—Electric heating elements. 1st October, 1943. (618777.)

9466. Kesselring, F.—Electrical resistance contacts operable by external pressures. 3rd April, 1945. (618779.)

9791. Standard Telephones & Cables, Ltd.—Transmitter control circuit. 2nd April, 1945. (618514.)

10893. Igranic Electric Co., Ltd.—Electric motor controllers. 9th April, 1945. (618515.)

11331. Standard Telephones & Cables, Ltd.—Recording system. 17th April, 1945. (618437.)

12278. Soc. Francaise Radio-Electrique.—Beacon systems for use in navigation at night or in bad visibility. 15th February, 1944. (618601.)

13367. Metropolitan-Vickers Electrical Co., Ltd., and Scoles, G. J.—Electric subtracting circuits. 2nd May, 1946. (618438.)

13529. Self-Priming Pump & Engineering Co., Ltd., Tull, W. C., and McKean, J. A.—Electric-motor-driven fuel pumps for aircraft. 3rd May, 1946. (618520.)

15217. Brown, R. H.—Pulse radar systems. 20th May, 1946. (618519.)

16369. Metropolitan-Vickers Electrical Co., Ltd., Saxon, G., and Crowley-Milling, M. C.—Flexible electric wave-guides. 21st May, 1946. (618446.)

15708.—Holter, A. (Kummler & Matter Akt.-Ges.).—Trolley-wire support systems for electric traction. 23rd May, 1946. (618782.)

16661 British Mechanical Productions, Ltd., and Deakin, S. T.—Resilient electric socket contact element. 31st May, 1946. (Cognate application 8874/47.) (618677.)

16685. Brown, N. H. B.—Means for mounting electrical components. 1st June, 1946. (618522.)

17100. British Thomson-Houston Co., Ltd.—Methyl silicone elastomers containing si-bonded vinyl radicals. 11th June, 1945. (618451.)

17374. British Thomson-Houston Co., Ltd.—Preparation of methyl silicone gums and elastomers. 11th June, 1945. (618452.)

17375. British Thomson-Houston Co., Ltd.—Methyl silicone gums and elastomers. 11th June, 1945. (618453.)

17376. British Thomson-Houston Co., Ltd.—Preparation of alkenyl-substituted chlorosilanes. 11th June, 1945. (618608.)

17566. Landis & Gyr Soc. Anon.—Filter circuit for use in remote control installations. 23rd June, 1945. (618454.)

18654. Patriarche, V. H.—Radar aircraft navigational systems. 21st June, 1946. (618460.)

19985. Radio Corporation of America.—Angle modulation receivers. 4th July, 1945. (618462.)

20460. American Cystoscope Makers, Inc.—Electrosurgical resecting instrument. 10th July, 1945. (618528.)

22007. Philips Lamps, Ltd.—Antenna systems. 2nd October, 1942. (618532.)

22666. Hass, Z. K., and Coop, E.—Frequency modulation reactance valve control circuits. 30th July, 1946. (618535.)

22927. Philips Lamps, Ltd.—Radio aerial systems. 22nd October, 1942. (618680.)

23572. Cinema-Television, Ltd., and Lance, T. M. C.—Screens for use in electron-discharge tubes and methods of forming such screens. 8th August, 1946. (Addition to 606819.) (618469.)

24048. Hudson Bay Mining & Smelting Co., Ltd.—Electrolytic recovery of zinc. 5th October, 1945. (618682.)

24120. Philips Lamps, Ltd.—Electronic amplifying circuits. 3rd August, 1945. (618789.)

25264. Compagnie Générale d'Electricité.—Construction of the terminals and the like of cables. 6th March, 1942. (618474.)

25462. Cork, E. C.—High-frequency transmission lines and wave-guides. 26th August, 1946. (618683.)

25967. Standard Telephones & Cables, Ltd.—Telecommunication systems employing differently polarized electromagnetic waves. 29th January, 1942. (618615.)

27540. Philips Lamps, Ltd.—Superheterodyne receiving circuits. 7th December, 1942. (618544.)

28010. Naamlooze Vennootschap Philips' Gloeilampenfabrieken.—Sound recording on carriers. 19th February, 1943. (618690.)

29401. Westinghouse Electric International Co.—Silicone polymers. 2nd June, 1945. (618480.)

30420. British Thomson-Houston Co., Ltd., and Keitley, R.—Measuring circuits for a.c. voltages. 11th October, 1946. (618692.)

30516 Goodrich Co., B. F.—Electrical insulating material. 21st January, 1941. (618550.)

30873. Bullers, Ltd., Perrins, G., and Robinson, W. G.—Electric insulators. 16th October, 1946. (618484.)

31052. Standard Telephones & Cables, Ltd., Glover, W. F., Roseway, W. N., and Giles, F. E.—Adjustable electric inductance coils. 18th October, 1946. (618694.)

31079. Philips Lamps, Ltd.—Method of manufactur-

ing electrolytic devices, more particularly electrolytic condensers. 19th February, 1943. (618685.)

31238. Philips Lamps, Ltd.—Electric-discharge tubes. 6th April, 1943. (618551.)

31627. British Thomson-Houston Co., Ltd.—Cathode-ray apparatus. 24th October, 1945. (618552.)

31807. Automatic Telephone & Electric Co., Ltd., and Baker, G. T.—Electrical signalling systems. 26th October, 1946. (618488.)

32742. Burgess Battery Co.—Electric dry cells. 14th November, 1945. (618679.)

32748. Metropolitan-Vickers Electrical Co., Ltd., and Mandl, A.—Motor-generator sets. 4th November, 1946. (618557.)

32749. Metropolitan-Vickers Electrical Co., Ltd., and Davies, D. R.—Metalclad electrical switchgear. 4th November, 1946. (618558.)

32750. Metropolitan-Vickers Electrical Co., Ltd., and Davies, D. R.—Electrical isolating and like switchgear. 4th November, 1946. (618559.)

32757. Philips Lamps, Ltd.—Frequency analysers. 3rd May, 1943. (618562.)

32782. Frigidaire, Ltd., and Abbott, F. A. S.—Refrigeration apparatus. 5th November, 1946. (618565.)

32875. British Thomson-Houston Co., Ltd.—Oven structures. 7th November, 1945. (618575.)

32882. Goss Printing Press Co., Ltd.—Eliminator for static electric charges. 23rd February, 1946. (618577.)

32932. Marconi's Wireless Telegraph Co., Ltd.—Electrical rectifying circuits. 6th November, 1945. (618624.)

32939. Allday & Son (1922), Ltd., H., and Bain, R.—Snap-action electric switches suitable for alternating-current. 6th November, 1946. (618626.)

32954. General Electric Co., Ltd., Friedlander, E. S., and Dunham, C. R.—Electric welding systems. 6th November, 1946. (618630.)

32984. Metropolitan-Vickers Electrical Co., Ltd.—Dodds, J. M., and Thomas, P. A. V.—Locking devices for shafts. 6th November, 1946. (618634.)

33008. Akt.-Ges. Brown, Boveri & Cie.—Current transformer with two-part magnetic core. 8th November, 1945. (618637.)

33091. Parsons & Marine Engineering Turbine Research & Development Association, and Peregrene, E. P.—Combustion units. 7th November, 1946. (618644.)

33133. Geloso, G.—Condensers for the regulation of radiophonic circuits. 2nd November, 1944. (618799.)

33160. British Insulated Callender's Cables, Ltd., and Kretschmer, J. M. (Legal representative of Kretschmer, H. E., deceased).—Insulated electric conductors. 7th November, 1946. (618649.)

33172. Lewis, J. H. W.—Ironing equipment. 7th November, 1946. (618803.)

33189. Automatic Telephone & Electric Co., Ltd., Taylor, R., and Irgin, C. R.—Telephone systems. 8th November, 1946. (618807.)

33273. Standard Telephones & Cables, Ltd., and Towner, S. H.—Light-current contact making electromagnetic relays. 8th November, 1946. (618812.)

33278. Neonelectric Co., Ltd., and Morgan, R. J. B.—Electric glow switches forming starting devices for fluorescent or other electric-discharge lamps. 8th November, 1946. (618813.)

33300. British Thomson-Houston Co., Ltd.—Manipulators for specimens in evacuated envelopes. 10th November, 1945. (618657.)

33309. Siemens Bros. & Co., Ltd., and Long, D. P.—Telephone and like selective systems. 8th November, 1946. (Addition to 6051317.) (618815.)

33392. Scottish Aviation, Ltd., and Lorimer, J.—Wiring systems for buildings. 11th November, 1946. (618701.)

33416. Long & Crawford, Ltd., Long, E., and Taylor, E.—Oil-immersed electric fuse-switches and circuit-breakers. 11th November, 1946. (618663.)

33417 Long & Crawford, Ltd., Long, E., and Taylor, E.—Electric fuses for use in switches. 11th November, 1946. (618664.)

33437. Westinghouse Electric International Co.—Refrigerating apparatus. 10th November, 1945. (618816.)

33441. Sulzer Frères Soc. Anon.—Apparatus for regulating the effective output of internal-combustion engined vehicles with electric power transmission. 15th November, 1945. (618666.)

33452. Pestarini, G. M.—Electrical power transmission systems. 11th November, 1946. (618868.)

33516. British Thomson-Houston Co., Ltd.—Methods of casting electrodes for X-ray tubes and casting moulds therefor. 13th November, 1945. (618824.)

33625. Phillips, C., and Smith, L. D.—Electric tumbler switches. 12th November, 1946. (618706.)

33681. Concordia Electric Safety Lamp Co., Ltd., and Cornish, J. P.—Electric battery charging stands. 13th November, 1946. (618708.)

33711. Metropolitan-Vickers Electrical Co., Ltd., and Hill, E. P.—Dynamo-electric machines. 13th November, 1946. (618709.)

33726. British Insulated Callender's Cables, Ltd., and Jones, P.—Machines for joining sheet materials by the heating effect of electric stress alternating at high-frequency. 13th November, 1946. (618830.)

33845. Holophane, Ltd. (Holophane Co., Inc.).—Lighting apparatus. 14th November, 1946. (618712.)

33959. Stone & Co., Ltd., J., and Schofield, W.—Secondary battery plates. 15th November, 1946. (618716.)

34126. British Thomson-Houston Co., Ltd., and Melville, W. S.—Cathode-ray oscillographs. 18th November, 1946. (618848.)

34313. Edholm, F. S., and Soderberg, G. G.—Clamping means for bending wire cable and the like. 18th May, 1946. (618724.)

34491. English Electric Co., Ltd., Ball, R. D., and Woodford, C. G. A.—Aircraft electric supply systems. 21st November, 1946. (618728.)

34792/3. Automatic Electric Laboratories, Inc.—Electromagnetic relays. 23rd November, 1945. (618731/2.)

34981. Wild, W., and Mantle, G. M.—Electric ignition distributor contact-breakers. 26th November, 1946. (618734.)

35243. Andersen, G. V.—Clamps for attachment to electrical insulators. 29th November, 1945. (618740.)

35268. Rapid Magnetting Machine Co., Ltd., and Thompson. M. D.—Magnetic separators. 28th November, 1946. (618741.)

35330. General Electric Co., Ltd., and Davies, C. E.—Plug-and-socket electric couplings. 28th November, 1946. (618744.)

35542. Whipp & Bourne, Ltd., and Whipp, I. T. L.—Electric circuit-breakers having arc extinguishing chambers. 30th November, 1946. (618749.)

35571. Maschinenfabrik Ruegger & Co., Akt.-Ges.—Automatic switchgear for overhead railways. 8th December, 1945. (618751.)

35772. Ross, I. M., and Hall, R. E.—Electrical terminals. 3rd December, 1946. (618755.)

35829. London Passenger Transport Board, and Dunton, C. E.—Insulated railway rail joints. 3rd December, 1946. (618758.)

Trade Marks

APPLICATIONS have been made for the registration of the following trade marks. Objections may be entered within a month of 9th March:—

JACKDAW (design).—No. 669,767. JACKDAW. No. 670,177. Class 9. Electrical vacuum cleaners and electrical carpet sweepers.—James Hilton & Son (Leigh), Ltd., Brookside Mill, Charles Street, Leigh, Lancs.

MINICOMM (design).—No. 670,475. Class 9. Intercommunication apparatus, radio receiving and transmitting sets (complete), sound producing and amplifying apparatus, and component parts of all such goods included in Class 9.—R.T.S. Electronics, Ltd., 2/3, King Street, Exeter, Devon.

MEMCERT.—No. 670,515. Class 9. Electrical apparatus and instruments included in Class 9, and wireless sets (complete), and parts of all such goods included in Class 9.—Midland Electric Manufacturing Co., Ltd., M.E.M. Works, Redding's Lane, Tyseley, Birmingham.

CONTRACT INFORMATION

ACCEPTED TENDERS AND PROSPECTIVE ELECTRICAL WORK

Contracts Open

Where "Contracts Open" are advertised in our "Official Notices" section the date of the issue is given in parentheses.

Argentina.—BUENOS AIRES.—7th April. Three pumping sets and ancillary plant. (C.R.E. (I.B.) 6109/49. Ten/280.)*

Ashton-under-Lyne.—29th March. Housing Committee. Electrical wiring of 94 houses. (See this issue.)

Australia.—BRISBANE.—1st April. City Electricity Department. Submarine cable and submarine pilot cable. (C.R.E. (I.B.) 7012/49. Ten/295.)*

Belfast.—1st April. Electricity Department. Dust extraction plant at Harbour power station. (11th March.)

Consett.—31st March. U.D.C. Electrical installations in 22 houses. (11th March.)

Hertfordshire.—County Council. Contractors wishing to tender for building and maintenance work should apply to the Clerk of the County Council. (See this issue.)

India.—MADRAS.—18th May. Government Electricity Department. Transformers and outdoor switchgear for Machpund hydro-electric scheme. (C.R.E. (I.B.) 6035/49. Ten/273.)*

Leeds.—12th April. Transport Committee. Two 1,500 kW and one 375 kW mercury arc rectifiers. (11th March.)

Londonderry.—26th March. The Northern Ireland Tuberculosis Authority. Electrical installation at St. Columb's Nurses' Home. A. T. Marshall, Princes Quay, Londonderry.

New Zealand.—WELLINGTON.—State Hydro-Electric Department. 7th June. Contract No. 106. 150 MVA or alternatively 250 MVA switchgear. 14th June. Contract No. 107. 250 MVA switchgear. 21st June. Contract No. 108. 150 MVA or alternatively 250 MVA switchgear. 28th June. Contract No. 109. 150 MVA or alternatively 250 MVA switchgear. 5th July. Contract No. 110. 150 MVA or alternatively 250 MVA switchgear. (C.R.E. (I.B.) 6242/49. Ten/269.)*

Peterborough.—9th April. Joint Education Board. Electrical installations at the Dogsthorpe-Newark County Primary School. (11th March.)

South Africa.—BLOEMFONTEIN.—2nd May. City Council. 2,500 overhead line insulators. (C.R.E. (I.B.) 6257/49. Ten/265.)*

JOHANNESBURG.—5th May. South African Railways Stores Department. Testing equipment. (C.R.E. (I.B.) 5556/49. Ten/285.)*

PRETORIA.—2nd May. City Council. Switchgear. (C.R.E. (I.B.) 6012/49. Ten/281.)*

Uruguay.—MONTEVIDEO.—Usinas Electricas y Telefonos del Estado. 26th April. 18,000 small indicator lamps for telephone switchboards. (C.R.E. (I.B.) 6170/49. Ten/277.)* 28th April. 7,400 kg of insulating tape. (C.R.E. (I.B.) 6167/49. Ten/276.)* 21st April. Supply of 540,000 incandescent electric lamps. (C.R.E. (I.B.) 6171/49. Ten/266.)* 27th April. 40,000 glass insulators for telephone lines. (C.R.E. (I.B.) 6168/49. Ten/287.)*

* Specifications may be inspected at the Commercial Relations and Exports Department, Thames House North, Millbank, S.W.1.

Orders Placed

Cumberland.—County Council. Electrical installation at Orton Park Children's Homes (£140).—G. Bowman, Ltd., Carlisle.

Orders Placed. — — ?— ?—

London.—L.C.C. Electrical installation at Netley Street School, St. Pancras.—Holmes & Larkinson. Electrical installation at Queen's Head Street Girls' School, Islington.—Escott Bros.

Contracts in Prospect

Particulars of new works and building schemes for the use of electrical installation contractors and traders. Publication in this section is no guarantee that electrical work is definitely included. Alleged inaccuracies should be reported to the Editors.

Amlwch.—Sewage pumping station for U.D.C.; Ward, Ashcroft & Parkman, Engineers, 38, The Temple, Dale Street, Liverpool.

Basingstoke.—Factory and offices, Winchester Road; L. M. Van Moppes & Sons, industrial diamond merchants, 33, Holborn Viaduct, E.C.1.

Ashton-under-Lyne.—Extensions to foundry, Whitelands Road; Goodbrand & Co., Ltd., Clarence Street, Stalybridge.

Birkenhead.—Technical and commercial college (£635,000); Willink & Dod, architects, Cunard Building, Liverpool, 3.

Bournemouth.—Block of 20 flats, Belle Vue Road and Wick Lane; Reynolds, Tomlins & Dexter, architects, Granville Chambers, Yelverton Road.

Bridgwater.—Houses (50), Hamp estate; borough engineer.

Bridlington.—Houses (50), Bessingby; Culpin & Son, architects, 3, Southampton Place, W.C.1.

Brighton.—Factory, Hollingbury; Typewriter Supplies, Ltd., 30, New Bridge Street, E.C.4.

Bristol.—Factory, Southmead; Disabled Persons Employment Corporation, Ltd., 25, Buckingham Gate, S.W.1.

Dwellings (621) and Civic Centre, Henbury Court estate; city architect.

Bury.—Primary school, Walmersley; J. Chadwick, borough engineer, Bank Street.

Chester.—Fire station, garage and workshop, Grosvenor Street (£30,000); C. Greenwood, city surveyor, Municipal Buildings.

Coventry.—Flats (82) and houses (253), Bell Green; city architect, 1a, Warwick Row.

Durham.—R.C. school, Heworth; county architect, Court Lane, Durham.

Ealing.—Block of offices, for Ministries of Pensions, Labour and Health; P. Caspari, architect, 20, Dorset Square, London, N.W.1.

Felling (Co. Durham).—Mineral water bottling factory, Carlisle Street for A. Tower and Co., Ltd.; C. S. Errington, architect, 46, Grainger Street, Newcastle-on-Tyne.

Glasgow.—Houses (2,374), Toryglen; Scottish Special Housing Association, East Kilbride Road, Burnside, Rutherglen.

Refuse disposal works, Polmadie, city engineer.

Grantham.—Two hostel blocks in connection with Teachers' Training College, Stoke Rochford Hall (£75,350), for Kesteven C.C.; C. B. Metcalfe, county architect, Sleaford, Lincs.

Grimsby.—Factory, Bourne Lane; H. Smethurst, Ltd., Ropery Street.

Hexham.—Rebuilding General Hospital (£800,000); Newcastle Hospital Board, Osborne Road, Newcastle-on-Tyne.

Hounslow.—Flats (36) in two blocks, for Heston & Isleworth T.C.; P. O. F. Hilton, surveyor, 88, Lampton Road.

Hyde.—Electrical installations in 84 houses, Harbour Farm estate; F. Marsland, 7, Bullock Street, Stockport.

Isleworth.—Extensions (£180,000), West Middlesex Hospital; North-West Regional Hospital Board, 11a, Portland Place, W.1.

Jersey (Channel Islands).—Factory, St. Helier; F. W. Meston, architect, 30, Clewer Hill Road, Windsor.

Littlehampton.—Police division headquarters (£30,000), for Standing Joint Committee; F. R. Steele, county architect, Chichester.

Liverpool.—Office block for Mersey Tunnel Joint Committee; H. J. Rowse, architect, Martins Bank Building, Water Street.

County infants' school, Lydiate; H. Thearle, architect, 66, Rodney Street.

London.—Battersea.—Houses (23), Sabine Road and Morrison Street (£33,930); Artisans & General Dwellings, Co., Ltd., 1, Cromwell Road, S.W.7.

Bloomsbury.—Science block and other buildings, University of London, Malet Place; Adams, Holden & Pearson, architects, Malet Place.

Wandsworth.—Dwellings (127), Rinaldo Street, Balham; borough engineer, Municipal Buildings, S.W.18.

Manchester.—Extensions to factory, Beswick, for A. E. & H. Robinson & Co.; H. Elder, architect, 66, Manchester Road, Wilmslow.

Works canteen and extensions to sawmill for Star Bodies, Ltd.; Drury & Gomersall, architects, 15, Oxford Road.

Newcastle-on-Tyne.—Works additions for the Selborne Domestic Engineering, Co., Ltd.; T. Clements & Sons, builders, Dene Joinery Works.

Substation and additions to filtering shed in Skinnerburn Road for Associated Lead Manufacturers, Elswick Lead Works, Newcastle; own architects.

Baths and washhouses; city architect, 18, Cloth Market, Newcastle.

Clothing factory, Blenheim Street, for Bestwear, Ltd.; C. Solomon, architect, 3, St. Mary's Place, Newcastle.

Newton Aycliffe.—Blocks of flats (£24,214); Edgar Lawson, Ltd., Darlington.

Otley.—Factory, North Avenue, for Guyson Industrial Equipment, Ltd.; secretary, Kirkstall Mills, Leeds.

Peterhead.—Reconstruction of wing of Academy (£14,700) for Aberdeenshire C.C.; county architect, 25, Union Terrace.

Plymouth.—Office block (five storey), Royal Parade, for Liverpool, London & Globe Insurance, Co., Ltd.; A. F. French, architect, Westminster Bank Chambers.

Portsmouth.—Large laundry, Farlington; A. & E. Chapman, Ltd., launderers, 42, Kingston Crescent.

Primary school, Paulsgrove; city architect, 1, Western Parade, Southsea.

Rhodes.—Additions, Calico Printing Works, Manchester Old Road; Architects' Dept., C.P.A., Ltd., St. James' Buildings, Oxford Street, Manchester 1.

Ruthin.—Extensions to county offices, including inter-communicating telephones, for Denbighshire C.C.; D. Wiles, county architect, Grove Park, Wrexham.

South Shields.—Additions to the General Hospital for the Newcastle Hospital Board, Osborne Road, Newcastle; P. H. Knighton, Board's planning architect.

Stockport.—Houses (50), Green Lane; Cormack & Co. (Lancashire), Ltd., builders, Broadstone Hall Estate, Heaton Chapel.

Sunderland.—Additions to Central and Fulwell fire stations (£19,000); J. E. Lewis, borough engineer, 27, Fawcett Street.

Swansea.—Primary school, Penlan (£99,260); borough architect.

Torquay.—Houses (64), Kilmorie estate; V. Margarian, 16, Broadsands Road, Churwell.

Tow Law (Co. Durham).—Houses (24), Martfield site; North-Eastern Housing Association, Northumberland Road, Newcastle-on-Tyne.

Truro.—Houses (98), Tregurra Lane site; borough engineer.

Tynemouth.—Houses (296); borough engineer, 19, Howard Street, North Shields.

New Collingwood School (£74,500); G. H. Gray, architect, Camden Street, North Shields.

Warrington.—Foundry, Wilderspool Ferrous Lightcastings, Ltd., Stafford Road.

Wem (Salop).—Houses (52), The Grove; Fred Morcom, U.D.C. surveyor, Barber House.

Westbury.—Cement works; Associated Portland Cement Manufacturers, Ltd., 192, Ashley Gardens, S.W.1.

Whitley Bay.—Electrical installations in 44 houses on the Seatonville estate; E. Roberts, U.D.C. surveyor.

Electrodepositors' Conference

LADIES and non-members will be welcomed to the annual conference of the Electrodepositors' Technical Society, at the Palace Hotel, Buxton, on 8th and 9th April.

There will be two papers at the first technical session on the Friday afternoon, on "Barrel Polishing," by Mr. H. Weiss, and on "Barrel Plating Without Tears," by Mr. A. W. Wallbank, and a conference dinner in the evening. On the Saturday morning there will be two papers on the "Examination of Blistered Electrodeposits on Zinc Alloy Diecastings," by Dr. S. Wernick and Messrs. H. H. Symonds and H. C. Castell, and on the "Surface Conditions of Metals in relation to Electrodeposits," by Dr. A. T. Steer.

Further particulars from the Society's conference secretary at 41, Bradford Street, Birmingham, 5.